



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

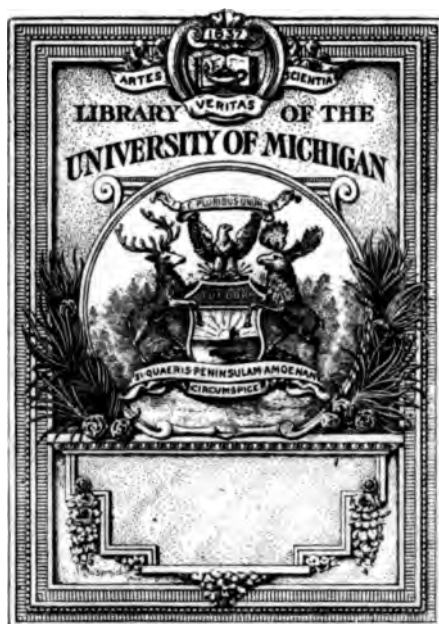
Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

B

839,805



THE  
BOA ENTRADA  
PLANTATIONS



B  
E  
N

## THE BOA ENTRADA PLANTATIONS



Monteiro de Mendonça, Henrique José

# THE BOA ENTRADA PLANTATIONS

S. THOMÉ

PORTUGUESE WEST AFRICA

“LA PERLE DES COLONIES PORTUGAISES”

TRANSLATED FROM THE ORIGINAL PORTUGUESE

BY

J. A. WYLLIE, F.R.G.S.

LIEUT.-COLONEL, INDIAN ARMY

EDINBURGH AND LONDON  
OLIPHANT ANDERSON & FERRIER

1907

**Dedicated**  
**TO**  
**THE GEOGRAPHICAL SOCIETY**  
**OF LISBON**



## MONOGRAPH

IN dedicating this monograph to the worthy and patriotic Geographical Society of Lisbon, I take this opportunity of giving public expression to the gratitude of Portuguese colonial agriculturists for the persistent efforts made by that Society for many years past in defence of our colonial possessions and in the propaganda of their utilisation by means of an ampler agricultural and industrial development.

The Geographical Society of Lisbon, while endeavouring to assure and maintain the integrity of our vast overseas patrimony, has been, in the most active period of historical revindications, the most strenuous among the defenders of the Portuguese cause, not only by written propaganda, by memoirs, memoranda, and published expositions, but also by practical demonstrations, and by voyages of discovery on the African continent, carried out under its auspices with such glory to the nation and enlightenment to science.

Having passed through this first phase of our modern colonial history, the Geographical Society of Lisbon, concerning itself directly with all matters affecting the reinforcement of the colonies by means of the development and exploration of their enormous resources, and promoting conferences on various aspects of the colonial problem, has lent to the country neither less nor less relevant services than in the firm and most tenacious defence of the historic rights of Portugal in Africa.

Having always with the liveliest interest watched its labours, more than once have I drawn from them a profitable example, a useful incitement; thus I deem it my duty to consecrate to that Society the present little work, the aim of which is to make known something of what Portuguese initiative and effort have done towards the development of

agricultural enterprise in the rich and promising island of S. Thomé, styled by an unbiased stranger "the pearl of the colonies and the paradise of the negro."

My belief is that some good work towards the prestige of the Portuguese colonies has been begun and done there; work contributing to some extent to the enhancement of Portuguese capacity for labour and testifying at the same time to the sincerity of Portugal's humane and civilising plans, a sincerity happily recognised by foreign powers and recorded in documents as to whose impartiality no doubt is admissible.

These things being so, I think my reasons for dedicating this modest work to the illustrious Lisbon Geographical Society are sufficiently explained. My only regret is that the book, so far as it embodies my notes and jottings, naturally arid, should not be clad in that chastened and correct form which would render its subject-matter more attractive and therefore more appreciable. Nevertheless it should have its value by virtue of its sincerity and truthfulness, and by the impartial spirit of straightforwardness and justice with which it has been sought to be inspired.

H. J. M. de M.

## PREFACE BY THE TRANSLATOR

THIS document should be read in connection with the information now being furnished to the world in general and the British public in particular as to the appalling methods of the Congo Free State and its agents. In an introduction written for Mr. E. D. Morel's remarkable book, *Red Rubber* (London, T. Fisher Unwin, Adelphi Terrace, 1907), apropos the grave responsibility attaching to each and all the European Powers possessing African colonies, SIR HARRY JOHNSTONE thus expresses himself :—

“The danger in this state of affairs lies in the ferment of hatred which is being created against the White Race in general by the agents of the King of the Belgians in the minds of the Congo Negroes. . . . Unless some stop can be put to the misgovernment of the Congo regions, I venture to warn those who are interested in African politics that a movement is already begun, and is spreading fast, which will unite the Negroes against the White Race, a movement which will prematurely stamp out the beginnings of the new civilisation we are trying to implant, and against which, except so far as the actual coastline is concerned, the resources of men and money which Europe can put into the field will be powerless.”

The task Mr. Monteiro de Mendonça has set himself, on a comparatively small scale it is true, and has performed as ably and efficiently as its limited conditions allow, deserves recognition, in its relevance to the general problem set by the Congo Free State, beyond the colonial circles to which the original monograph is addressed. It is in no way a detracting from the noble work now being done by Mr. E. D. Morel and others to point out that their criticisms are essentially destructive. If the situation in West Africa is to be saved for the White Man, whatever

his nationality, constructive work more or less on the lines adopted by Mr. Monteiro de Mendonça must follow the eradication of the existing régime.

Mr. Mendonça's testimony, incidentally offered, to the helpful attitude maintained by the Portuguese colonial authorities wherever the rights of the Negro are in question, has especial value at the present time, when impressions to the contrary have obtained currency and credit in other quarters.

J. A. W.

EDINBURGH, *September* 1907.

# THE BOA ENTRADA PLANTATIONS

## S. THOMÉ

### I

THE island of S. Thomé, which with that of Príncipe forms the province of S. Thomé-and-Príncipe, is not only the first agricultural colony of Portugal, but probably the first in all Africa, possessing as it does in its marvellous fertility the source of great prosperity and wealth. Originally colonised in the fifteenth century by islanders from Madeira, it attained a high degree of development through its sugar-cane crop, which in the seventeenth century had such a value as to suffice largely for the markets of the metropolis, despite the competition of foreign sugars; a competition favoured by a liberal protection in import duties, assured by the Customs Rights (*Foral*) of Lisbon, as proclaimed by King Philip iv. of Spain, then King of Portugal. The sugar trade of S. Thomé was sacrificed towards the end of the eighteenth century or the beginning of the nineteenth to the development of a similar industry in the colony of Brazil, then specially preoccupying the Metropolitan Government.

It was at the end of the eighteenth century (1795) that coffee plantations were first started, these progressing rapidly and forming the leading cultivation up to the middle of the nineteenth century. Cocoa was introduced in 1822, making a slow progress until its development was accelerated by the violent crisis which arose between 1870 and 1876, when production increased apace, reaching about 3000 tons in 1890, 5000 in 1892, 6000 in 1894, 7000 in 1895, 10,000 in 1898, 11,428 in 1900, 16,723 in 1901, 20,965 in 1903, and 23,377 in 1905. In less than twenty years (1888 to 1905) the value of the cocoa produced in S. Thomé rose from about 300,000 milreis (£66,667) to 4,363,800 milreis (£969,733). Given the necessary

coefficients of correction for the excess, taking into account the production of the island of Principe, we may reckon the output in 1905 as 4,500,000 milreis, or one million sterling. At the same time and in the same period (from 1880 to 1905) the output of coffee dropped from 2206 tons to slightly over 1500 tons, and its value from 504,000 milreis (£112,000) to about 360,000 milreis (£80,000). We should mention that in the reduction of the milrei to sterling we take exchange at par (4500 reis to the pound). The agricultural properties of S. Thomé have a value of from 150 to 180 million milreis (£33,333,333 to £40,000,000), the area actually being worked extending to 80,000 hectares.

Apropos a campaign recently renewed, with motives readily intelligible, against the Portuguese colonial administration, the question of native labour in S. Thomé has been passionately attacked and malevolently represented. One of the first to raise this question was Mr. Nevinson in *Harper's Magazine*, who declared categorically that the recruitment of native labour in the province of Angola for the plantations of S. Thomé was nothing more nor less than the revival, pure and simple, of the ancient slavery. *Tropical Life* of London brought out a corrected and amplified edition of the audacious statements of Mr. Nevinson, and straightway the philanthropic Aborigines' Protection Society associated itself with him, going so far as to attempt to bring about an intervention of the British Government in defence of the interests of civilisation and humanity, said to have been rudely attacked and injured by the Portuguese administration. Lord Lansdowne in 1905, as Lord Granville in 1884 to analogous demands of the Anti-Slavery Society put forward by Lord Mayo, had to recognise the inanity of the accusations.<sup>1</sup>

<sup>1</sup> A short time ago, in the British Parliament, the question of the engagement of native labourers in the province of Angola, intended for the plantations of S. Thomé, was raised afresh. Sir Edward Grey, Minister for Foreign Affairs, in saying that the attention of the Portuguese Government had been drawn to the matter, stated that he was awaiting the report of the British Consul in the Congo, who had been specially charged to ascertain what basis there was for the accusations directed in this respect against the Portuguese administration. The British Consul in the Congo Free State is Mr. A. Nightingale, who for many years exercised the functions of Consul in Loanda, and who, having visited more than once the island of S. Thomé, the plantations of which colony and their working system being thus known to him, is in a position to give conscientious information on the subject, doing justice to the manner in which the Portuguese authorities have done, and are doing, their duty.

For the rest, no one knows, or ought to know, better than the British Government the liberal co-operation of the Portuguese legislature in the matter of recruitment of native labour; for not only was it under cover of it that that Government engaged natives in Moçambique for its South African colonies (as also did France, going so far as to frame a regulation over the signature *Barbey* which is modelled on the Portuguese regulations), but up to the present day, under cover of the *modus vivendi* of 1901, its contracts continue to be made for the Transvaal mines. Portugal does not require to defend herself, for her defence is safe in the hands of the illustrious foreigners who have visited S. Thomé, notably the very president of the Aborigines' Protection Society, who went there to inform himself at first hand of the horrible crimes of the slavers, and returned—terribly disappointed; also Dr. Schulte, Dr. Strunk, M. Chevalier, M. Cattier, and we were going to say M. Rolin as well, in spite of the *tourne-face* made by him regarding our colonial management, reading from the breviary of Mr. Nevinson. We may now cite the opinion of the learned German colonial authority, Dr. Werth, who at a recent meeting of the German Colonial Society in Königsberg gave it as his mature opinion that "Germany ought to follow the example of the United States, and abstain from discussing the alleged atrocities of the Congo; for if those existed, they constituted abuses beyond the responsibilities of governments, and regarding which not even the English colonies themselves are free from blame." Dr. Werth might have cited in support of his assertion the extraordinary revelations, not disputed, made in the Belgian and French Chambers in the end of February of this year (1906) regarding the humanitarianism of the administrative processes of the Belgian and French Congo. In Portugal, under a legislation obviously liberal, ensuring a rigorous supervision of the authorities, tribunals exist, and these, when it is a case of correcting abuses practised to the detriment of native rights and in violation of the protection assured to the native by law, are inflexible and rigorous to a degree, so much so that not many years ago they condemned a European implicated in proceedings of this kind to twenty-eight years' penal servitude.

As has been mentioned, the question of labour for the colonies has been much discussed of late, principally since the opening of a persistent campaign by means of the English philanthropical associations against the treatment of natives in the Congo Free State, into which matter a rigorous

inquiry has been made, its conclusions serving as the starting-point of new and violent attacks, which for its part the Congo Free State has aimed at weakening as far as possible by endeavouring to show that in the other colonies, in spite of protective laws, abuses similar to those charged against its administration have never ceased to exist. In their zeal to justify, wherever possible, irregularities practised in violation of the principles of humanity and the laws of civilisation, but unable to deny, in the face of unanimous testimony from the best-informed and most competent of foreign travellers, that the conditions of labour in S. Thomé-and-Principe are model ones, they have tried to blacken the conditions of recruiting native labour in the province of Angola, so as to represent these as constituting genuine cases of slavery, a matter very easily disposed of, for this recruiting is carried on according to laws and rules most rigid, by means of regular contracts executed under the active and direct supervision of the authorities, exactly as used to be done in the Portuguese colonies of East Africa for the English colonies of South Africa, for the French colonies in the Indian Ocean, for the Congo Free State itself, and (as is still being done, as we have noted above), in virtue of an international agreement, for the mines of the Transvaal, and as, moreover, a few months ago was done in Angola itself, by the intervention of the British Consul, for the construction-work of the railway from Lobito to Katanga. The contract with the native labourer is just the formula adopted, in harmony with the nature, temperament, and propensities of the native, to urge him to labour, "pour les amener au travail," as M. Cattier<sup>1</sup> puts it, a formula which, without offending the principles of humanity, undoubtedly exercises, in its application, a great influence upon the economic interests of the colonies, and corresponds to the theory of free labour expounded by M. Cattier—that is to say, that the native should be made to work, but to work in freedom on the task chosen by himself, carried out in compatibility with the exigencies of his private life, and with the climatic, political, and economic conditions of the region where he lives. The formula of the contract with the native hands in the Portuguese colonies corresponds, moreover, with the theory of Mr. Alleyne Ireland,<sup>2</sup> one of the specialists most in evidence on modern colonial policy

<sup>1</sup> *Études sur la situation de l'État Indépendant du Congo*, par M. F. Cattier, Professeur de l'Université de Bruxelles. Paris-Bruxelles, 1906.

<sup>2</sup> In a series of letters published in the *Times* some months ago on colonial administration,



not only in the United States but also in England, once the need for recruiting labour for tropical lands is recognised, in the colonies where there is an insufficiency of local population, from colonies which by their climatic conditions and greater density of population may be able to supply it with the suitable qualifications for agricultural work. Monseigneur Angouard, Bishop of the French Upper Congo, only a few months ago, in a book upon the Congo,<sup>1</sup> defended compulsory labour for the blacks, maintaining that it should be enforced with great firmness but prudence, adding that the utilisation of native labour in Africa, far from being classed as slavery, represented a social state much more favourable than that of the white labourer at home, a real slave under the yoke of taxation, of military service, and of the harsh exigencies of rural labour. The black, added the illustrious prelate, not having any wants, living for the passing day without care for the morrow, *will not work unless compelled to do so*, and will not civilise himself except against his will. Now between the theory of *forced but free labour* of M. Cattier and that of *compulsory labour* of Mgr. Angouard it is obvious that the formula adopted for the agreements of the native labourers in the Portuguese colonies is one which better tallies with the principles of civilisation and humanity, for not only does the native enter freely into his contract and, as far as the province of S. Thomé-and-Principe is concerned, follow a current of emigration which may be described as traditional and of a century's standing, but has the certainty that there he will find not only a solicitous protection, but the elements of a comfort and well-being far superior to that enjoyed by the working classes in the operative centres of the civilised world.

A. R.

Mr. Alleyne Ireland, who is an authority on the subject, did not conceal his scepticism as to the result of free labour. Since the abolition of slavery, says he, all the efforts made to obtain the necessary complement of labour have proved that, except in regions where the population is very dense, the blacks will not submit themselves of their own accord to continued exertion, whatever its nature, and the result of increasing salaries has actually been to reduce, and not to increase, the available quantity of labour. The theory that it is possible to teach the native to realise the moral dignity of labour, or at least to cause him to beget for himself new wants, has been destroyed by universal experience, which has proved it an entirely false way of looking at the case.

<sup>1</sup> *Vingt-huit années au Congo*. Poitiers, 1906.

## II

The Roça Boa Entrada in the island of S. Thomé, containing an area of 1700 hectares of land, was founded more than thirty years ago, out of various acquisitions, and is actually the property of Senhor Henrique José Monteiro de Mendonça, who obtained it by marriage with a daughter of its founder. It is formed of different plantations whose boundaries have been rounded off by the purchase of little pieces of adjacent land. The first task of the new proprietor was to fix its limits and secure the protection of the property, then to systematise the working, to develop and enlarge the plantations. Born in Lisbon, and educated in the Escola Academica of Lisbon, a model institute, Mr. Monteiro de Mendonça began by taking an interest in the study of colonial publications, especially of those bearing directly on colonial cultivation, and this led to changes and improvements in the working and organisation of the Roça Boa Entrada, where numerous trials were made of new products, and the system of collecting and preparing cocoa was improved and perfected. In the prosecution of this ideal, Mr. Monteiro de Mendonça took far-seeing views, hesitating at no expenditure, however great, not merely in *matériel* but in the technical instruction of his plantation managers. Thus in 1903 he engaged the eminent German professor, Dr. Schulte, specially to give practical instruction as to the preparation of cocoa, mainly in order to correct the defect of its marked acidity. The impression made upon Dr. Schulte by the installations and the conditions of labour on the Roça Boa Entrada, and published by him in the chief German reviews, was spread abroad throughout the greater European colonial centres, since when the Boa Entrada plantations have been the first objective of the visits of German, English, French, and American colonists, and of high functionaries of the neighbouring colonies, as well as of travellers *en route* for the West African possessions.<sup>1</sup> In spite of the substratum of

<sup>1</sup> In February 1903, when passing through S. Thomé on the way to Benguela, the English engineers forming the first brigade of surveyors for the construction of the railway line from Lobito to Katanga visited the Boa Entrada estates. Letters received in Lisbon in March of that year stated that those distinguished visitors had declared that they had known eight or nine plantations in British colonies, but had never seen a better estate than this.—*Economista*, No. 442, of 15th March 1903.

ill-will which may exist under the criticism and examination of the state of labour in S. Thomé and of the hostility possibly provoked in certain interested quarters by the knowledge of the extraordinary fitness of the soil of that opulent island to the cultivation of cocoa, which secures for it in our markets a very considerable influence,<sup>1</sup> what is certain is that, in the unanimous opinion of strangers who visit it, not only the general arrangements but also the conditions of service on the Boa Entrada estate are truly model ones, and much has to be learnt from them.

We have said that the system of agricultural working on the Boa Entrada has been gradually improved and perfected. It possesses machinery of the first order. Coffee-making machines by Squier of Buffalo will be found there, cocoa huskers by Masson of New York, sawing machinery by Kirchener, installations and railways by Koppel of Berlin, filters by Carrée Fils aîné and Pasteur, Squiers' hydraulic rams, oil-presses by Greenwood & Batley of Leeds, besides subsidiary apparatus and appliances from the principal houses of Europe and America. The geological and agronomic survey of the Boa Entrada has been made, also by special agreement, by M. Maurice Montet, an agriculturist holding diplomas of the School of Grignon and of the School of Colonial Agriculture of Tunis. From the interesting report of M. Montet, which may be regarded as an excellent guide to tropical agriculture, we have drawn part of the information set forth in this monograph. The series of photogravures which illustrate it will supplement the deficiencies of the narrative, giving as they do an idea of what this magnificent property really is, how devotedly it is treated, and however much it may do credit to the intelligent and patriotic solicitude of Mr. Mendonça, how much the more does it redound to the reputation of the country and its capacity for colonisation. By their means will be estimated at their true value the pile of buildings, the state of the quarters intended for the native labourers, the hospital, the infirmary, the smaller hospital intended for contagious cases, the estate house, and the property as a whole in its various aspects, including the processes employed, the equipment of the railway and workshops, the plantations at various stages of evolution. This last is an undeniably instructive point, as it proves

<sup>1</sup> Perhaps in this circumstance resides the true reason for the campaign so persistently kept up against the conditions of native labour in S. Thomé and its recruitment in Angola.

clearly that the description of the special features of the Boa Entrada is by no means exaggerated. We ought to add that to bring this model estate to the highest level of perfection there even exists a crèche in a building of its own, which it is intended to confide to the care of the worthy Hospital Sisterhood. At present the children are assiduously cared for, being placed during the day in the charge of two trusty estate-servants under special arrangements. The mothers, during the final period of gestation, are also subjected to a course of complete *ménagement*, prolonged throughout lactation, during which latter period they are only required to do work compatible with their state. Such is, and such has been, the work of one man, who, devoting himself earnestly to the task, has been able to organise and start a model colonial experiment, as testified to by witnesses beyond suspicion, witnesses who at this moment stand forth as the best disproofs of the insidious slanders of a certain propaganda against Portuguese colonial enterprise.

A. R.

### III

The estate of Boa Entrada, now so well known abroad by the reports of the travellers who have visited it, has a superficial area of from fifteen to seventeen million square metres, of which more than ten million are covered with plantations in full working order. As regards the system of cultivation, the excellence of the installations, which are complete from every point of view, be it of agricultural and industrial fitness in the strict sense of the term, or of protection, housing, and turning to best account the labour establishments, the great Belgian explorer, M. Theo Masui, who was in S. Thomé in 1900-1, deputed by the Compagnie Sucrière Européenne et Coloniale, writes thus: "Je pense que les colons belges qui veulent se consacrer aux entreprises de cultures auraient beaucoup à étudier ici."<sup>1</sup> For his part, Dr. Strunk, in his report of a prolonged visit to S. Thomé published in the *Gordian* of October 1905, writes thus impartially, referring to his stay on the Roça Boa Entrada: "I was surprised to see so complete an equipment, and what I examined

<sup>1</sup> *Bull. de la société des études coloniales*, Nos. 4 and 5, April and May 1901.

of it surpassed my expectations, the treatment and style of life of the labourers striking me very forcibly. The labourers are lodged in eight wide dormitories, each family having its own private apartment, built of brick, four metres in breadth by four in length. The hands during their term of service acquire a genuine capacity for and experience of plantation work, which renders their labour much more valuable. The food is really good. The components of their ration (rice, flesh or fish, beans, and flour) make up, from a physiological point of view, the best-chosen dietary possible." A little further on, M. Strunk, referring to the equipment of the hospital (under the direction of a European doctor), and of the crèche, and to the attention paid to the general health of the natives, adds: "The sanitary arrangements are worthy of mention. If in this respect the Portuguese Government have had recourse to oppressive measures, I have not come across any instance of the kind. I have convinced myself that in Germany the maintenance of the labourers on the great rural estates is certainly not better." Describing the estate, he notes the entirely modern character of the installations, the electric equipment, and the motor power furnished by the water which supplies the tanks or ponds intended for the use of the workmen. By day this power is used to drive machinery, by night it is turned to account for lighting purposes.

We now return to Dr. Schulte, whose residence in S. Thomé we have already mentioned. Dr. Schulte is an expert in tropical agriculture, of high repute and well known in Germany. After visiting the German colony of South-West Africa, he stayed six months in S. Thomé, making special experiments in the fermentation of cocoa, introducing new processes the application of which, continued up to the present day, has given the best possible results. The first thing that Dr. Schulte said when communicating to the colonial societies his impressions was, that the marvellous fertility of the soil and the assiduous care devoted to the plantations had astonished him. "The island of S. Thomé," said he to our distinguished countryman Senhor Almada Negreiros in Paris, "should be regarded as the first planting colony of the whole world. The extension of work which it has been necessary to undertake there is indeed a matter of wonder, well deserving to be styled colossal." Afterwards, in his conferences, Dr. Schulte declared the soil of S. Thomé to be suited to all sorts of tropical cultivation. Experiments made by him with certain textile and

other plants showed that these could be acclimatised there perfectly. He stated that he had seen in S. Thomé the finest plantations of cocoa. The general equipment of certain plantations, notably that of Boa Entrada, was veritably model, the network of railway lines laid down for agricultural purposes was important, and the treatment of the *personnel* excellent. The native of Angola will always be regarded as the only workman equal to the task of efficiently developing the prosperity of the island. *Coolies* can only be utilised in the workshops and in domestic service. The whole region is of an extraordinary richness, threatened, however, by a too exclusive devotion to a single crop. In his opinion it would be advisable to multiply the variety of the products raised, so as to turn each of them to account at the proper season. Thus the cultivator should protect himself against the peril of possible agricultural or economic crises.

Following the opinion of Dr. Schulte, we have that of M. Montet, who visited and made a stay in the Roça Boa Entrada in 1904, and who may be summed up in his own expressions: "It is here that the humanitarian spirit may be seen at work in a tangible form, far-seeing, widely open to conviction of the justice and rightfulness of the cause; Boa Entrada is in itself a little city, where will be found realised all the ideals of progress, both scientific and humanitarian." Going on to describe the magnificent agricultural property, M. Montet comments upon the perfect harmony existing between the European supervising staff and the native labouring establishments, all animated with the sincere desire to do their duty thoroughly. The dwellings, he notes, are comfortable, the food abundant and wholesome. The negroes of S. Thomé are relatively happier there than are the Europeans. What might have been a paradox five-and-twenty years ago is to-day an incontrovertible truth. When *serviçais* (the name commonly applied to native labourers) are mentioned, the closet humanitarian understands, and, it is reported, too often says *slaves*. But is a European who agrees to render services, on certain conditions of work to be done and payment to be received, likewise a slave? Given the invincible inertia of the native, repugnant to all regular and disciplined labour, preferring to plunder the estate for his living, an industry favoured and encouraged instead of being suppressed by some legal corrective such as exists in Trinidad,<sup>1</sup>

<sup>1</sup> In Trinidad the sale and purchase of native produce is regulated. Proprietors and their duly authorised agents are alone permitted to sell, but for purchase a licence is required

these contracts are of real civilising value. The installations of the Boa Entrada comprise buildings symmetrically arranged, separated by wide streets, and lighted by electric light. Each building contains nine divisions, tiled, with plinth and window. These modern *sanzallas* are constructed of brick and roofed with tiles, so as to allow air to circulate freely through them. In the rear, and independent of the houses or barracks, are the cook-rooms. In the dependency of Agua Casada the barracks are of cemented stone, roofed with tiles. In Rio de Ouro the ancient type of wooden *sanzalla* is being transformed into the modern system of Agua Casada. After describing the dietary, M. Montet goes on to notice the care with which the blacks are treated: "well sheltered, well fed, well treated, the negroes are nevertheless liable to diseases brought on by the climate or by their own imprudence in not taking advice and obeying the rules of sanitation. There is here a large and a small hospital, the latter reserved for serious contagious cases, in both of which the most rigid hygiene is maintained. The pharmacy is complete, the surgical appliances the most up-to-date and perfect, the separate wards, the bathrooms, everything foreseen to the smallest detail. Many cities of Europe, innumerable cities of the colonies, do not possess hospitals so well designed and maintained, and our visitors have reason to admire what they see here." Speaking of the conditions of labour, whose execution is exemplary, the illustrious agriculturist has solid ground for certifying that the labour is performed cheerfully, the hands all singing, laughing, joking with one another, occasionally losing their tempers, but ending up well. The work of the women is light, as they do not gather the cocoa, but only shell it; they go out to collect forage for the cattle, pick over the coffee, look after the fermenting-boxes of cocoa, the drying-screens and the barbecues. The children do more play than work. Division of labour in the Boa Entrada is, so M. Montet affirms, fully understood, and is proportioned to the strength and intelligence of the labourers, so that it is impossible here to produce any exhaustion due to overwork. In the cultivated portions, the Boa Entrada covers an area of 1700 hectares, divided into three dependencies, Agua Casada, Maclu, and Rio de Ouro, a fourth being projected at Agua Telha,

costing £2, and this is subject to rigid supervision, fines being imposed for infractions, abuses, and frauds, ranging from £5 to £50 according to circumstances.—*Culture et Préparation du Cacao à la Trinidad*, Aug. Elot. Paris, 1900.

a long way from the central section. The regional zone is very diversified, full of ravines and well watered.<sup>1</sup> The climate, as is the case as a rule in the tropics, is divided into two seasons, a wet and a dry, the former (winter) being from October to April, the latter from May to October: these, however, are theoretical limits. According to M. Chevalier, the quantity of rain falling in S. Thomé is on the average 1·014 m. per annum, the maxima being: in March, 153 mm.; April, 149 mm.; May, 111 mm.; October, 124 mm.; and November, 160 mm.; the minima in July, 0·55 mm.; and August, 0·8 mm. The temperature on Boa Entrada ranges from 18 centig. (64·4° Fahr.) to 32 (89·6° Fahr.) in the shade. The nights are relatively fresh, due chiefly to the intense humidity of the atmosphere. The pleasantest season of the year is the dry or *gravana*, the most appropriate to the acclimatisation of the European. The water is of excellent quality (but filtration should not be dispensed with) and extremely fresh. Except on the coast, mosquitoes neither make themselves felt nor heard. As we have already said, on the Roça Boa Entrada cocoa plantations predominate, about 800,000 plants being in existence, the principal kinds cultivated being the Criollo (the most abundant), the Trinidad, and the Caraccas.

Let M. Chevalier now have his say. He is the French explorer who was deputed in 1905 by M. Roume, Governor-General of French West Africa, to visit the principal West African colonies with a special eye to their agriculture, and who remained in the *enchanted isle* of S. Thomé from the 14th of August to the 1st October of 1905, where he had every opportunity of utilising the facilities afforded him by the Portuguese administration and the cultivators, and was enabled to make a useful study of "a country which is not known in Europe as it deserves, though it is the pearl of the Portuguese colonies."<sup>2</sup> M. Chevalier, after giving a description of its geological formation, its climate, its agriculture, the distribution of its crops by zones, and of its economic situation, notes the intelligent initiative of its great agriculturists, who have prepared and created its actual prosperity. He concludes by stating that they may well be proud of the results obtained, for its success forms the crown of a labour both persevering

<sup>1</sup> Nevertheless, this region is not the hilliest nor the most cut up by ravines of the cultivated portions of the island.

<sup>2</sup> *Bull. de la Société de Géographie de Paris*, No. 4 du 16 d' Avril 1906.



and continuous. In no part of the world, perhaps, has so much work been done in so short a space of time, with so small a body of labourers and so scanty means. M. Chevalier also makes reference to the question of labour, saying that the system of recruiting has been the object of severe attacks in recent times, but he does not say that these attacks have been well founded—on the contrary, he is in a position to deny this, for undoubtedly the accurate information necessary to discredit them has been by no means deficient in Paris. M. Chevalier, as in another place we have shown, has somewhat exaggerated the mortality of the working population of S. Thomé. But, to sum up, his discussion, unbiased in so many respects, offers compensations to balance this reference to the conditions of labour in S. Thomé, in which the eminent explorer may have been somewhat chauvinistic through his adherence to a certain order of ideas, fostered largely in French colonial circles, *ça va sans dire*.

The cultivation of cocoa in S. Thomé, says Dr. Strunk in his noteworthy report published in the *Gordian*, has taken on such a development within the last fifteen years, and has given results so admirable and constant as have never before, in so short a space of time, been obtained in an equal or similar area in any other country. All who are interested in this class of enterprise have something to learn from the circumstances of cocoa-production in this island. Dr. Strunk went to S. Thomé accompanied by M. van der Loo, representing the Victoria Planting Co. (O.A.P.C.). Describing his visit to Boa Entrada, Dr. Strunk says: "We had notified beforehand our probable visit to the Roça Boa Entrada, which enjoys the reputation of being the best installed and most complete from all points of view." After describing his arrival at the Roça, where a return of fever laid him up for three days, Dr. Strunk began his examination of the lands and plantation buildings. Speaking of the intervention of Government in defence of the native labourers' interests, he went on to say: "Government have, for the protection of the native labourers under contract, a high official (curador) whose duty is not only to defend them, but also to harmonise the interests of planter and labourer, assuring to each his respective rights." The opinion of Dr. Strunk, which we shall again have occasion to quote, and which cannot be too much quoted, taking into consideration his authority and the causes which led to his visit to the plantations of S. Thomé, cannot possibly be clearer or more frank. We

should mention that in the reports to which we have referred there are appreciations equally flattering of several other plantations on the island of S. Thomé—Santa Margarida, Monte Café (where he was also received with true Portuguese hospitality), S. Pedro, S. Nicolau, Saudade, Esperança, Rio de Ouro, and Diogo Vaz.<sup>1</sup> When leaving S. Thomé, Dr. Strunk wound up by writing thus: "I have said adieu to that blessed land with the full conviction that it offers advantages for the culture of cocoa that the Cameroons certainly do not possess, though by other circumstances I am convinced that these may some day attain a development equal to that of S. Thomé." It will be understood, granting the official mission of Dr. Strunk, that he would try, in referring to the facts as they appeared to him, to draw attenuating conclusions which might serve as an incentive to the planters of the German colony. In this there prevailed, as was natural, the feeling of patriotism, and, to do him entire justice, we must loyally recognise the justice he has done to our work, and make a return to it with equal loyalty and sincerity.

#### IV

The plantations of the Roça Boa Entrada comprise cocoa, coffee, and rubber (1896), not to mention some thousands of palm trees,<sup>2</sup> with bananas, bread-fruit, kola, abacate, jack, mango, etc., lining some 24,000 running metres of regular roads six metres broad, which cut the property in different directions and serve as beds for railway lines on the Decauville system. Besides these there are 18,000 metres of road through the

<sup>1</sup> The Roças of Esperança, Rio de Ouro, and Diogo Vaz, whose equipment is of the first order, belong to the great Portuguese colonial agriculturist, Count de Valle Flor, and include a considerable area of land in full cultivation. These great properties, containing a working population of more than 3000 natives, produced in 1905 more than 4000 tons of cocoa. Now that they have an extensive network of railways intersecting them in every direction, nothing is wanting to harmonise them with the requirements of agricultural traffic, down to the simplest installations, all subordinated to the most rigorous of processes and the most approved modern system. The Count de Valle Flor, whom one may justly style a most meritorious agriculturist, has a true patriotic passion for the development of the Portuguese colonies. His initiative has been a strong incentive and a great example.

<sup>2</sup> In 1905 there were on the Boa Entrada estate about 22,000 palm trees.

plantations, constructed to expedite the work of collection and transport. An analysis made in 1905 of a sample of india-rubber produced on Boa Entrada (an experimental cultivation) classifies this article, in certain conditions, as equal to Central American scrap from the *Castilloa elastica* of those regions, and worth about 1800 reis a kilo (4s. 2d. a lb.). The output of cocoa on the Roca Boa Entrada, valued at monthly stock-takings carried out with great care and exactitude, has been, since 1891, in tons (round numbers) as follows:—

Year.	Tons.	Year.	Tons.
1891 . . .	259	1898 . . .	557
1892 . . .	310	1899 . . .	657
1893 . . .	286	1900 . . .	475
1894 . . .	361	1901 . . .	644
1895 . . .	430	1902 . . .	677
1896 . . .	370	1903 . . .	730
1897 . . .	443	1904 . . .	716

From 1890 to 1905, 1166 native labourers, representing an expenditure of about 150,000 milreis, had been introduced into this plantation. The mortality, according to the same method of computation, which depends largely upon the physical conditions into which the worker comes, has been on the average of recent years (1901-5) 8·5 per cent.<sup>1</sup> The provisioning of the establishments of the Roça Boa Entrada, besides what is furnished by the local plantations in the form of cattle and live-stock of the different kinds there raised, includes enormous quantities of food-stuffs, rice being computable on the average at 100 tons, maize flour at 20,

<sup>1</sup> M. Chevalier's statement that the mortality amongst native labourers in S. Thomé averages 10 per cent. is much exaggerated and not borne out by statistics. For a calculation of the mean, one should take into account the mortality in normal periods. In the period 1890-1904 we had seven abnormal and eight normal years. The mean of the former gives 14·8 per cent. and of the latter 6·25 per cent. In the period July 1903 to July 1905, two years, 143 natives died on the Roça Boa Entrada. The average strength of the labour establishments during this period, taken in the middle of July 1903, 1904, and 1905, was 627·2. The causes of death were: anæmia, 36; undiagnosed, 27 (of whom ten were children); pneumonia, 23; dysentery, 21; pulmonary tuberculosis, only 6; general debility, 5. Alcoholism, in spite of all restrictions and the supply of light wines, is the principal cause of exhausting disease. The blacks drink freely of camphorated spirits of wine, tincture of quinine, tincture of arnica, and even concentrated solution of thymol, and obtain secret supplies of palm wine in process of preparation, over and above what is habitually supplied to them.

codfish at 18, dried fish at 35, dried flesh from La Plata 6, preserved meat 12 tons, not to mention 15,000 litres of wine, 1200 of sterilised milk (for the crèche and hospital), 6000 of palm oil, 10,000 of mixed beans, and 600 of manioc flour. Every Sunday an ox from the herd on the estate is killed. The monthly mean of labourers actually employed—that is to say, of those who go out to agricultural work out of doors—was 618 in 1902, 599 in 1903, 542 in 1904, and 600 in 1905, falling to 476 in 1906. The expense of upkeep of the Roça Boa Entrada, with an average strength of 600 native hands, rose in 1905 to 105,571\$734 reis (£23,460), which may be specified in detail as the budget estimate of an estate of 16,000,000 square metres :—

Managing staff	.	.	.	13,114\$284 reis	£2,914
Working establishments	.	.	.	49,466 436	10,993
Hospital	.	.	.	2,764 850	614
Cattle	.	.	.	5,479 415	1,217
Carts	.	.	.	385 650	86
Works	.	.	.	10,706 450	2,379
Government taxes	.	.	.	13,569 808	3,016
Sacking charges	.	.	.	3,366 820	748
				<u>98,853\$709</u>	<u>£21,967</u>

The difference between these general charges and the total expenditure in 1905, 6718\$025 reis or £1493, represents the total cost of household furniture and utensils, office work, agency, premia on transfers, assurances, plants and seeds, machinery, etc. To get an idea of the development of the general expenses, let us give the following tabular statement of the expenditure from 1897 to 1906, indicating the average number of labourers :—

Year.	Hands.	Expenditure per Annum.	
		In Currency.	In Sterling.
1897 . .	325	50,496\$391	£11,221
1898 . .	321	58,304 250	12,956
1899 . .	410	104,050 920	23,122
1900 . .	481	92,163 237	20,482
1901 . .	428	100,080 056	22,240
1902 . .	618	137,532 125	30,563
1903 . .	699	102,364 870	22,747
1904 . .	542	92,126 657	20,472
1905 . .	600	105,571 734	23,460
1906 . .	476	82,451 183	18,322
		<u>925,142\$423</u>	<u>£205,585</u>

To explain the marked variations, especially in the years 1899, 1901, 1902, and 1903, it should be mentioned that in 1899, 10,000 metres of rails and rolling stock to match were acquired to the amount of 15,111,920 reis (£3356); in 1901, agricultural machines and railway material to the value of 3,809,240 reis (£848); and, in 1903, more machinery and rails to the value of 5,231,160 reis (£1180). From 1900 to 1905 the cost of machinery purchased rose to 11,628,145 reis (£2584). The extent of railway serving this vast property has now reached 21,000 metres. The acquisition of new machines is under consideration, for certain branches of working demand special appliances which up to now it has not been possible to obtain on the lines indicated, such as those intended for the transformation and preparation of the coco-nut. In spite of the notable development which of late years agricultural machinery so called has undergone, it is certain that in many cases the machinery manufactured turns out imperfectly adapted to the work for which intended. This is, at this moment, one of the most interesting aspects of the problem of colonisation, agricultural and industrial. It seems to us that the great makers should send special travellers to the colonies as the Americans do, with a view to their ascertaining exactly the rôle that the machinery is destined to fill, by means of a direct personal examination of the working conditions, the quality and the nature of the products, as well as the different operations to be performed.

One of the most interesting institutions of the Roça Boa Entrada, dating from 1898, is the co-operative store for native labourers, who there obtain their food-stuffs at cost price, placing them beyond the reach of speculation. The following table will give an exact idea of the working of this singular institution :—

Year.	Number of Hands.	Wages Paid.	Receipts.		Profit per Hand.	
			Gross.	Net.		
		£	£	£	s.	d.
1898	321	1357	736	182	11	0
1899	410	1439	703	122	6	4
1900	481	1446	798	102	4	3
1901	428	1412	723	88	4	0
1902	618	1839	765	52	1	8
1903	599	1924	775	41	1	3
1904	542	2114	775	34	1	2
1905	600	2531	883	45	1	5
1906	476	2134	821	52	1	9

Each labourer has in a special book his ledger account, where is entered the quantity and value of the goods consumed during the month. The store sells him wine (white and red), brandy, tobacco in leaf, soap, gingham, white cotton, white and coloured handkerchiefs, chintz, belts, cloths, shirts, vests, pipes, candles, matches, crockery-ware, etc. This institution aims at weaning the native, as far as possible, from habits of alcoholism, and at the same time leading him to recognise the value of economy. The saving principle of the institution resides in selling to the native what he wants at cost price, so as to keep him from spending his money off the estate. But this is difficult. As may be seen from the above table, in 1906 the 476 labourers, having received in wages no less than 9,603\$280 reis (£2134), only spent in the co-operative store 3,694\$550 reis (£821), the difference, which is considerable, having been spent outside. *Chassez le naturel, il revient au galop*. There is no way of correcting the fatal tendency of the native to excess in drink, a vice which absorbs all his gains, depauperising him and rendering him useless. It would be a great and glorious mission for the Cabinet humanitarian could he bring about a modification in this invincible tendency of the negro, not on paper but by practical educative methods, avoiding on the one hand the raising of intoxicants to a prohibitive price, and on the other their absolute prohibition, a measure which the negro tries, and always will try, to evade.

## V

M. Maurice Montet, in opening his special report on the Roça Boa Entrada, declares himself much surprised at the great fertility of the island of S. Thomé, and says he has never in the course of his travels found a vegetation so intense and varied, nor was he prepared for such exuberance of equatorial flora. "It affords one of the finest and most moving impressions." Boa Entrada, he remarks, is situated in the most fertile portion of the island. M. Montet classifies the holdings comprising the Boa Entrada in four groups: Boa Entrada, Rio de Ouro, Maclu, and Agua Casada, with the subdivisions of Agua Telha, Morro Sacli, and Volta da Jaca. He considers Agua Casada the most interesting portion of the

plantation, as much on account of the diversity of its soil as of the varied crops which it is capable of producing. The lands of Maclu, and in Rio de Ouro those of Vallão de Cima, he also thinks worthy of special note. In the report of M. Montet there are, as a result of his analysis of the soil, a series of observations and instructions aiming at putting those lands into a proper state of cultivation, but his remarks are not of sufficient interest to justify their reproduction here. In the course of this monograph we shall have occasion more than once to revert to the work of M. Montet upon points as they arise in the text. S. Thomé is volcanic in formation. Trachytes and basalts arising from the ocean have produced by the slow or violent agency of the elements a soil of a marvellous fertility. Boa Entrada belongs to the most fertile region of the island. Its soil, however, lacks primordial elements,—nitrogen, potash, phosphoric acid, lime, for example,—but those of incontestable value, though secondary, such as iron, magnesium, alumina, are all to be found there. M. Montet in his interesting work has aimed at procuring the former and making the best possible use of the latter, studying carefully each zone of the plantation. This work, if separately published, would be a very valuable guide for the planter in S. Thomé.

In Boa Entrada the chief products are the cocoa,<sup>1</sup> but meanwhile, with great forethought, it has been endeavoured not merely to keep up the coffee plant, but also to make experiments with new products. It is to this conception, entirely modern, that is due the development which has taken place of palm plantations, and which aims at creating plantations of *Castilloa elastica*, *Hevea brasiliensis*, *Ficus elastica*, *Cryptostegia grandiflora*, *Landolphia owariensis*, *Ricinus sp.*, *Agavia mascarenhensis*, *Agavia yucatan (sisalana?)*, etc. The Eucalyptus has not come to maturity, nor have the seeds of *Kicksia (Funtumia) elastica*. On Boa Entrada there is a fine specimen of the *Caryota urens*, a native of India

<sup>1</sup> On the processes of working the cocoa tree in Boa Entrada, the most interesting monograph is that published this year (February 1906) by an intelligent and studious pupil of the Instituto de Agronomia, Senhor Bandeira de Mello. In this work, one of the most complete published in Portuguese on matters relating to colonial agriculture, will be found, along with a description of the various installations, the necessary information on the cultivation and treatment of cocoa, with magnificent photogravures of the work on Boa Entrada at different stages in the harvesting of this richest of our colonial products.

but commonly known as the Madagascar palm. The coffee tree predominant in the island of S. Thomé is the *Coffea arabica*, a species which grows from sea-level up to 1400 metres, but is most extensively cultivated between 700 and 1200 m. The *Coffea liberica* is best adapted to elevations between sea-level and 500 m. At 700 m. the cinnamon and vanilla thrive, the *thuya*, tea, camellia, banana, chiefly the *Musa paradisica*, etc. Sugar-cane grows very well in S. Thomé, but its cultivation tends to disappear. This crop was nevertheless S. Thomé's greatest source of riches in the earliest days of occupation and colonisation. Possessing cocoa and vanilla, and possibly sugar, might not under certain circumstances the local manufacture of chocolate be a fitting source of profit to the colonist?

## VI

In the fulfilment of a duty which I gladly perform, let me add here the expression of my lively gratitude to my old friend Senhor Augusto Ribeiro, of whom I have asked the favour of a revision by him and the giving of form to these notes, collected to make up this long-planned sketch of the Boa Entrada estate. I thank him for the trouble he has taken, adding as he has not only new scraps of information and notes, but special chapters all his own, one of which, upon colonial policy as regards the labour question, is certainly most attractive and opportune. In it the eminent colonist, so esteemed in this country and abroad, has more than once displayed his extensive acquaintance with and undisputed competence for the subject, giving thus to this monograph an interest far greater than it could have had had it been limited simply to my own notes.

I must at the same time offer, as a measure of truthfulness and justice, my best thanks to Senhor Silvestre Thomé Dias da Silva, who for nearly ten years has devoted himself with the greatest loyalty and zeal to the management of the Boa Entrada estate, as I owe to his single-hearted good-will and perseverance the success attained and set forth in this monograph, proved and confirmed by independent



and authoritative testimony. In justice it is also my duty to refer to Senhor Dias da Silva's substitute, Senhor Joaquim Gaspar Rodrigues, who has given such excellent proof, whenever circumstances have allowed of his doing so (and that has not been seldom), of his high administrative capacity.

**H. J. M. DE M.**

,

.

## MEDICAL REPORTS

THE Roça Boa Entrada is in the lower zone of the island of S. Thomé—that is to say, in the region essentially swampy and sickly. It begins at the seashore, on the beautiful beach which faces the Isla das Cabras, and runs along a smiling hill, crested with little peaks and cut up by extensive valleys, as high as the ledge Maclu, the height of which does not exceed 150 metres.

The factory constituting the headquarters of the estate is at the base of the Maclu ledge, at 100 metres above the sea and 8 kilometres inland, in a wide depression which unfortunately is not open to the south—the direction of the prevailing winds. The want of ventilation makes the climate of the plantation very warm, and the exuberant vegetation gives it an excessive humidity.

Heat and moisture, except in the higher regions of the island, where moisture dominates, are the characteristics of this equatorial climate. But in the Roça Boa Entrada, and especially at the headquarters of the estate, due to the low elevation, the luxuriance of the vegetation, and the sheltered position, heat and moisture attain their maximum.

The topographical conditions of the property in relation to its crop and system of agricultural working do not allow of the location of the factory elsewhere. Thus this defect of the Boa Entrada is an incurable one, and the mortality among the blacks has consequently always been high, in spite of the hygienic precautions and the attention in all directions so thoughtfully and zealously practised by its proprietor to combat the same.

And though much has been attained, Boa Entrada will never be able to reduce its death-rate to a minimum figure as ought to be the case did it depend upon the money spent and the care taken towards the improvement of the position of the hands.

The *terreiros*, so called, of the estate, a vast space bounded by the factory installations and intended for the drying and preparation of the products gathered, which used to be rather marshy and full of pools, have been paved and drained. The lands round about have been reclaimed and cleaned up. A brook which crosses them, intended to move the engines and to supply water for various purposes, domestic and agricultural, has been canalised and cemented. A splendid *sanzalla* (coolie barracks), built in brickwork and roofed with Mangalore tiles, with separate compartments for the different negro families inhabiting it, each room being large and well ventilated, was completed in a few months, an excellent piece of work of its kind. An elegant hospital, with general wards and special rooms, constructed in timber, raises its tasteful frontage on the south side of the *terreiros*. Another hospital, expressly intended for the isolation of cases of intestinal disorder so as to secure the most favourable hygienic conditions, closes these *terreiros* on the northern side. Farther on are the dwellings of the European subordinate staff. Many other buildings might be noted: stores, engine-rooms, workshops, etc., and finally the house where the management is located, which, though antiquated in type, is nevertheless large and healthy.

All these edifices, lighted by electricity at night, have reached a degree of cleanliness, comfort, and even elegance which it would be hard to beat. In spite of everything, the death-rate is high, having been, between the 1st July 1901 and the 30th June 1902, the first year of my medical charge, 9 per cent. In the year following, the second and last of my presence as a medical man, it was rather more, but I have not sufficient data to state the exact figure.

The pathology of the plantation, however, presents no special features, the whole island being in much the same case. It has included in some of its forms a conspicuous accentuation, and as such worthy of note. I refer to dysentery and to pernicious or dysenteriform diarrhoea. On the 21st August 1901, the date of a report made by me, I remarked as follows: "Dysentery is the most dreaded phantasm of the estate." This has never ceased to be so; all ranks of employés pay a large annual tribute to it. The very children, whose death-rate has always been high on account of bad climatic conditions, give a notable percentage under this head.

I cannot, in a work of this order, which, by the special character of the

monograph into which it is to be incorporated, must not be other than superficial, go deep into medical considerations. It would still be curious, and above all things elucidative, were the question to be examined in comparison with what occurs on other properties on the island where for seven years I was a practitioner.

I cannot, however, omit to mention that dysentery, the predominant and epidemic malady which has always presented itself, in my experience, in its known and classical forms, although frequently malignant, attains from time to time a degree of intensity such as to carry off in so short a period as forty-eight hours a healthy, robust labourer. As is well known, the diagnosis of the disease is simple, and its clinical forms present no diagnostical difficulty; for whatever the hypothesis, the cases on Boa Entrada fall clearly and exactly into the types of the malady as described in works of authority on the subject. What has to be specially noted is, through the impoverishment of the organs and the virulence of the germ, the brutal energy of the attack and the rapidity, often horrifying, of its evolution.

Senhor Henrique de Mendonça, the proprietor of Boa Entrada, who has always most honourably and intelligently watched over the well-being of his hands, alarmed at the terrible endemic which sacrifices so many lives, has left nothing undone to combat it, and besides the buildings and improvements I have above described, he has put into practice all the precautionary measures and treatment recommended to him by the profession. Filters have been set up for the purification of the water intended for the consumption of the labourers. The sick have been most rigorously isolated; all measures of disinfection compatible with that most elementary precaution have been adopted. He has made practical rules on various points with a view to the earliest recognition of the disease and its treatment in good time. He has built a sanatorium at the seaside for convalescents, etc. etc.

Much has been attained — very much. But still the victims whose deaths have to be recorded as due to dysentery are numerous.

A young doctor, able and willing, was resident for a whole year on the estate, with sole medical charge of it, and thus in a position to render medical aid at any moment. This gentleman, Mr. Lucio Tolentino da Costa, endeavoured to carry out his mandate with notable energy. He held post-mortem examinations of corpses, advanced theories, applied various methods

of treatment, tried new drugs, and recorded notes from which the general trend of his efforts and experiments may be seen. His work was not in vain, and if the results have not been better, the fault is not with him, nor with the proprietor of the Boa Entrada, who gave him every facility, nor with the superior staff of the plantation, who seconded him loyally.

On the 1st of July 1901 I took charge of the Boa Entrada, and with less competence than my predecessor, but with equal good-will, I put into practice the resources of my limited science and the large discretionary powers placed so amply and unreservedly at my disposal, in order to obtain some improvement in the state of affairs. I should like to believe that the measures adopted by my advice were not entirely useless. I am not altogether dissatisfied with their result, it is true; but success has not been so complete as I should have wished, considering the devotion I bestowed on the cause and the tenacity with which Senhor Henrique de Mendonça has adhered to the working-out of his fixed design, and the deserved sympathy bestowed by both of us upon the black labourers.

I lived in the city of S. Thomé, an hour and a quarter's ride from the central offices of Boa Entrada. I used to pay a weekly visit to the hospital of the estate and a monthly one to the seaside sanatorium. Besides this, I did what was necessary with regard to urgent cases, and when for any reason I was unable to respond personally to an extraordinary call, I would substitute the services of one of the other doctors practising in the island.

Through the information gathered during the week by the European hospital assistant, and communicated to me at each visit, I was enabled to keep myself *au fait* with the state of health of my charge. Every few weeks I would make my own notes, though already in possession of the information given, and correct these where necessary from the existing registers of the estate. Thus if the establishments on Boa Entrada were suffering (as on the other estates of the island) from pneumonia, anæmia, tuberculosis, sleeping sickness, etc., I should know it, likewise when it was dysentery that was at work, either killing its victims outright or indirectly through the agency of one or other of the maladies just mentioned, these removing the patient who had succeeded in resisting the original invasion of disease. This was especially the case with anæmia, almost always the sequel of a

dysenteric attack, although there was also prevalent, and that on a large scale too, an essential anæmia due to duodenal ankylostoma.

As the psychology of my patients varied with their acquired habits, I divided them, for the better accomplishment of my task, into two categories, those of old and new hands. The former men, resident for some time, in certain cases for many years, on the estate, were more liable to contract disease through long exposure to the deleterious influence of the climate, and, in many cases, through their own intemperate habits. These were the most averse to hygienic precautions and reluctant to report sick when attacked. The new hands, freshly arrived from the deserts of Angola, often suffering from nostalgia, but in most cases in a well-balanced state of health, accepted most readily the discipline of the hospital, and these formed my second category.

To these people and to the others, it was by means of the *caseiros* (a class of negro overseer), and the European employés in charge of the outdoor work, specially trained in this respect, that I conveyed sanitary instruction. This teaching was not always very fruitful, for it is not easy to drive out of minds such as these ancient habits of thought and rooted preconception. Nevertheless, I made constant efforts in this direction, and in the medical visitor's book I recorded insistent recommendations.

Thus in the case of the old hands the greatest possible efforts were made to diminish the use of alcoholic liquors, to which they, far more than the new hands, devoted themselves, as of absolute right; habits of cleanliness were inculcated by means of the general bath; also the protection of the abdomen against nightly chills, abstention as far as possible from the use of brook water not previously boiled, from irritating foods, excess of fruit, etc.

Much was not attained by all this lecturing and catechising, which to their minds must have appeared a confused and troublesome babble. However, some good was achieved by it.

As a more practicable measure, heads of houses (*caseiros*) and employés were enjoined, as soon as they discovered symptoms of purging among the men under their charge, to let the estate manager know. In such a case the hand was at once placed in the hospital in a special ward under observation. I myself used to go from time to time to the outlying portions of the plantation and inspect the hands, and had no great difficulty, nor would

anyone accustomed to that class of practice have much, in guessing at the disease by the general aspect of the man, the brilliancy of the eye, and the parchment-like dryness and cold of the skin.

The new hands, besides being the object of the same attentions, were all without exception inspected by me when they arrived on the estate. After that they had a long period of absolute rest, at the Casa Maclu, at a distance from the central factory, on a little hill, a healthy place, used formerly for Europeans. There, in the completest and freest independence, they underwent their physical and moral adaptation to their new surroundings, under the supervision of an old negro of the estate. After this they had a long period of insignificant work, and only later on did they enter upon the regular tale of task-work.

There is an old custom on the island of giving a saline purgative to the newly arrived labourer. It is the perpetuation of a pernicious practice in vogue for both blacks and whites, and is the worst abuse of the purgative, the mainstay of treatment in all maladies. I remember one day making a periodical visit to an estate of which I held medical charge, when I found a European employé who was suffering from slight bilious hæmoglobinuric fever. He declared himself to be anxiously waiting for me to prescribe him his *sixth* purgative. He had taken five, but though these were strong ones, he wished me to give him one still more effectual, which should be his last and most definite—to complete the half-dozen!

I have always tried to combat this abuse of a medicament which, however valuable when properly administered, is in the highest degree hurtful when taken improperly, for reasons which are obvious. On the same principle, I have always opposed the preconception which makes it a Medo-Persic law to give a purge to the newly arrived hand from the wilds of Africa.

This last is a blunder. The labourer finds himself often face to face with a dietary to which he is unaccustomed, with unfamiliar fruits tempting his palate, and, not controlling himself by constant watchfulness, he is constantly upsetting his gastro-intestinal system and suffering serious derangements. The prompt result, so often observed by me, is diarrhœa, and from diarrhœa to dysentery there is but a step in a region where the germs of the latter, lurking everywhere, do not fail to seize upon and occupy a soil so well prepared for them. I have resisted this practice, I say, except, of course, in the cases where it is positively indicated.



On the other hand, I have adopted, as a preventive, and for long periods, though in moderation, the disinfection of the intestines and all the known means of protecting the abdominal organs.

Once intestinal derangement has manifested itself, it has been combated as vigorously as is compatible with the medical treatment and nursing available in those parts, the greatest care being taken to destroy the *feces*.

The black does not always carry out with energy the correct treatment of intestinal irrigations so as to gain the greatest benefit from them, but he submits to it; as, similarly, he submits to everything when put to him with kindness and humanity by those who in dealing with him have the moral force requisite to rule him. The black labourer is after all an exile, and this circumstance itself gives him a contemplative turn of mind, soft and docile, leading him wherever it is sought to take him, if one knows how to convince and guide him. Among the many good qualities the black possesses, this is one of the most salient, and it would be doing him an injustice to deny it.

I do not dwell here upon the methods of medical treatment adopted by me, most of which will be found in the recognised text-books on the subject, others being experiments of my own, by no means discouraging. These I should not consider suited to notes of so superficial a character as this work, and moreover, I should not be able to complete my statement of them for want of access to the prescription books of the estate. In the memoranda of the hospital of Boa Entrada and in the book where I used to record my visits, making a practice of jotting down notes showing the track I was following, my orientation may be found and followed out by others more competent than I where really useful, *if* useful, and its defects, by no means few, corrected similarly.

At the end of the first year of my practice it is on record that within that year there were 45 deaths, 4 being due to diarrhoea, 1 to enterocolitis, 4 to anæmia, 4 to general debility, 4 to pneumonia, 2 to pulmonary tuberculosis, 2 to bronchitis, 1 to apoplexy, 1 to cancer of the uterus, 2 to sleeping sickness, 1 to nostalgia, 4 to undiagnosed diseases, and 15 to dysentery. This last, as usual, claimed the largest share.

Of the other ailments it is unnecessary to speak in these unpretentious notes, for they do not assume any special character on the Boa Entrada

estate, nor are they of exceptional intensity. They present the recorded pathology of the black races, which, well known in its clinical forms, is devoid of interest—uninteresting as to its symptomatology, its treatment, and its percentage of mortality. Suffice it to say, that *inter alia* I entered in the register of medical visits the following note relating to the first six months of 1902 :—

“ . . . Following up another order of ideas, we see that there have been in the six months of this year 32 deaths. Adding to these the 13 of the second six months of the past year, we have a total of 45 deaths for the year of my medical charge (July 1901 to June 1902). Now, seeing that by degrees more and more hands have been added to the labour establishment during this period, and reckoning therefore an average strength of 500 labourers as the population of the estate, we find that the mortality is 9 per cent.

“ It is plain that this is not an ideal state of things. Far from it, when we take into account the care devoted to the sick in hospital on the Boa Entrada estate. But if we remember that the hands introduced, and, as new arrivals, demanding very great attention, were numerous, that the Boa Entrada estate has a bad climate, and that the last rainy season has been exceptionally bad all over the island for the black population, we have but little to reproach ourselves with. On the contrary, I am sure that many properties in S. Thomé have this year had a mortality equal, nay superior, to that of Boa Entrada, without the introduction of new hands or the specially bad climate of the latter. The conclusion to be drawn from all which is, that we may be content with what has been done, but convinced that, having kept mortality down to this figure, it is possible to reduce it even lower.”

Indeed, if for convenient computation we compare the calendar years, we find that in 1900, with a mean population of 484 hands, 93 being new, the mortality was 92, or, in other words, 19 per cent. In 1901, with a mean population of 430, 107 being new hands, the mortality was 36, or 8 per cent. In 1902, with a mean population of 620, 164 being new hands, the mortality was 52, or 8 per cent. It would be curious to see, in these years in detail, the share that dysentery has claimed, but I cannot verify the proportion, not having here in Lisbon the data for its calculation. Suffice it to say that, from the resemblance to what occurred between July 1901 and June

1902, the greater part of the havoc must have been caused by this disease.

What is beyond a doubt is, that the sanitary state of the plantation must continue to advance by virtue of the improvements constantly being introduced. When the buildings, etc., of the outlying parts of the estate, which are so many more nuclei of population, reach the state of perfection of the home plantation (and to this end constant efforts are being made), the state of things will be much more flattering. This will no doubt take time, for it is only a person unacquainted with the conditions of undertakings of this order in these regions who can fail to make allowance for the slowness with which such works must necessarily be carried on, no matter how much they may be expedited.

The triumph will never be complete, it is true, because the climate of Boa Entrada, susceptible like all others of being influenced for the better, cannot be transformed radically. But it will be sufficiently so to give an ample recompense for the devotion and humanity so persistently lavished upon its amelioration.

The intelligent and methodical good-will of Senhor Henrique de Mendonça has succeeded in making his beautiful property one of the finest triumphs of colonial agriculture. It is so to-day, and it will be incomparably more so when all that he has planned has been accomplished. And if it is a model of colonisation—rational, consistent, and courageous—it is at the same time a splendid example of hospitality to all employed upon it, be they white or black.

Several of the former labourers live to-day in independence upon lands granted to them, enjoying, in return for services rendered in the past, a retirement spontaneously accorded to them. This fact represents a noble comprehension of the rights of others which is all the more valuable when displayed in the case of poor blacks who do not always realise their rights, and rarely know how to enforce them.

The European employés<sup>1</sup> have also special concessions in the form of

<sup>1</sup> The Europeans, for whom the climate of Boa Entrada is not worse than that of the other plantations in the lower zone, suffer, as in all parts of the island, from different forms of paludism. It should be noted that dysentery is not common among them, due, no doubt, more to sanitary precautions than to the local conditions of the plantation.

leave to Europe every two years, on full pay and with passage paid, a further and an honourable recognition of the life and services of others.

In conclusion, I should say that one thing impressing most favourably the visitor to S. Thomé is the note of elegance and good taste betrayed by the more modern constructions. One can see at a glance that the proprietor who has planned and directed these buildings has done so with enthusiasm and with the eye of an artist. More than this: in these lands of hard work it is more necessary than elsewhere to infuse into existence the largest possible element of cheerfulness; and to promote this cheerfulness it is indispensable to secure a gracious and inviting aspect to the surroundings in which one lives and works. Boa Entrada possesses all this. Whoever goes there experiences a feeling at once reconciling and unexpected on seeing the houses standing forth amid the paraphernalia of agricultural operations and glittering in the bright sunshine, or, after the day's work is done, resting under the electric light, with the laborious population taking its ease in the hypnotising silence of the warm night.

Whoever lives on terms of intimacy with these surroundings gives to them his genuine sympathy. And I, who for two years was the physician to this estate, from which I have parted never to return, have endeavoured in these pages, of no scientific character—mere impressions drawn with a running hand—to convey mine to the reader of them.

ANTONIO JOSE D'ALMEIDA.

LISBON, *April* 1904.

## MEDICAL REPORT ON THE BOA ENTRADA ESTATE FOR THE PERIOD FROM JULY 1903 TO JULY 1905

DURING this period there died on Boa Entrada 145 persons, 2 being Europeans and 143 Africans. The Europeans died of—

Bilio-hemoglobinuric followed by anuric fever . . . . .	1
Pernicious malarious fever . . . . .	1

The Africans died of—

Anæmia . . . . .	36
Undiagnosed (10 children) . . . . .	27
Pneumonia . . . . .	23
Dysentery . . . . .	21
Diarrhœa . . . . .	9
Pulmonary tuberculosis . . . . .	6
General progressive debility . . . . .	5
Sudden death . . . . .	2
Ascites . . . . .	2
Tetanus . . . . .	2
Suicide . . . . .	2
Meningitis . . . . .	1
Gastralgia . . . . .	1
Bronchitis . . . . .	1
Beri-beri . . . . .	1
Elephantiasis (?) . . . . .	1
Vermes . . . . .	1
Murder . . . . .	1
Fever . . . . .	1
Total . . . . .	145

Under *anæmia* certain cases of unclassified disease are returned, occurring among labourers of the dependency *Água Casada (Praia)*, as they were anæmic; under *diarrhœa*, two cases diagnosed as *enteritis* and one

as *intestinal infection*; under *general progressive debility*, one case diagnosed as *nostalgia* and another as *cachexia*. The causes of so many cases remaining undiagnosed are—

1. The black states his complaint in a fashion so vague and incomplete that the medical man can only be guided by objective symptoms.
2. The impossibility of diagnosis in many cases among children.

I begin by what concerns the European staff, and on this I have but little to say.

Nothing can be concluded from the fact that two deaths occurred in two years, for the staff of the Boa Entrada, as of all the plantations in S. Thomé, is constantly being replaced, and it is thus impossible to attribute to local causes the bulk of the maladies from which they suffer.

I know many employés with long residence on Boa Entrada; these do fairly well as a rule, for they make good use of the comforts unstintingly afforded to all the servants of the estate. They live well, as they have a table of the first order, without distinction for any class of servant; they observe the rules of hygiene in their personal life as far as these are compatible with their duties, complaining to the doctor and following his prescriptions when sick, and being constantly helped by the tolerance and good sense of the administrator of the property.

The transitory establishments, if so I may term them, as a rule take no care whatever of their health. To their way of thinking, no doctor is any good who prescribes them quinine, and the worst employer is he who does not give them at least a litre of wine at each meal. They invariably take a purge every week and an emetic once a month, not to mention the emetic and the purgative in addition taken by them whenever they have a headache, a pain in the stomach, or toothache. They prefer, to the excellent table which they have available, half a dozen green mangos and a big draught of bad wine.

My observation of the climate of Boa Entrada does not lead me to regard it as an ideal one for Europeans; it is, however, far from deserving the bad reputation it has, a reputation invented by employés of the transitory order—birds of passage—who despise everything connected with hygiene and cleanliness, and never stay longer than a month on any estate.

I do not know what the worthy proprietor of the Boa Entrada can do

more than he has done for the benefit of his European staff. What he has done for the native establishments is great, and he is still doing more.

Mortality is high, and is produced for the most part by anæmia, pneumonia, and dysentery. Against these causes of death a veritable campaign has been waged: houses of the first class have been built (the finest in the island); the food is more than sufficient, and of good quality; bed-clothes are supplied; the greatest consideration is shown for labourers who complain, even for those whose complaints are manifestly simulated; the work is moderate and proportioned to the strength and capacity of each hand; the doctor's prescriptions are scrupulously observed; exceptional care is taken of the children and of pregnant women, etc. etc. All this has been done for years past and with persistence on Boa Entrada, yet the mortality stands high, and, as far as I can see, will remain so for some time longer. The beneficial effect of the new housing arrangements, finished this year, will no doubt be great, but slow and gradual; and all the improvements already made will not suffice to put an end to anæmia, pneumonia, and dysentery, the apparent and proximate causes of death; the real and remote causes are much more important and almost impossible to be directly attacked. Those are two principally, if not exclusively—alcoholism and geophagy. I may be mistaken, and this opinion be mine alone; but I am convinced that were it possible in S. Thomé to do away with these two cankers, the deaths would be less by ninety per cent.

#### ALCOHOLISM

The hands, almost without exception (I have been tempted to strike out the *almost*), have a veritable passion for alcohol: I have seen men imbibe with delight camphorated spirit, tincture of quinine, tincture of arnica, and even a concentrated alcoholic solution of thymol! They have palm wine as much as they want, and use and abuse it; for over and above what they buy, they need only, should they want more, make a hole in the top of a palm tree and fix a calabash to it, which next day is full of the wine.

Then they have brandy in the *forros* and the *villas*.

The *forro* is a parasite of the estate; it lives on what is stolen from the

latter, and supplies brandy to the hands in barter for cocoa, coffee, bananas, and, what is worse, for the rations which the hand receives from his employer for his own support; for the labourer will give all he possesses, and may even steal, to get brandy. Boa Entrada is surrounded by *forros*; a positive army of parasites battens upon it, and in return makes the labourers anæmic and drunkards.

The direct action of alcohol on the intestines produces inflammations acute and chronic, diarrhoea, and dysentery; many of the prevalent forms of liver complaint are the result of alcohol. A slight bronchitis, a mild jungle fever, the most insignificant ailment, takes on in the alcoholic subject an exceptional gravity. A pneumonia, a dysentery, any disease accompanied by high fever, are in the alcoholic almost always fatal. I need not further insist upon the effects of alcohol, for the subject is a well-known one; I confine myself to pointing to alcohol as one of the first causes of mortality in S. Thomé.

#### GEOPHAGY

Another vice of the black labourer, deep-rooted and not less prejudicial than alcoholism, is the habit of eating dirt. In the European it is always a symptom of disorder or of some abnormal state (pregnancy, etc.). Not so in the black. I have seen Africans, robust and vigorous, without the slightest manifestation of anæmia or other disease, either out of pure greed and gluttony, or by the instinct of imitation (especially among children), devour earth. They taste it, pick and choose, rejecting this to eat that, as the more savoury, and all done in the most natural way in the world. One will give another, in token of friendship, morsels of earth chosen as a special tit-bit and evidently discriminated as such, for the secret of where it is to be found is carefully guarded, and there are those who, when they recognise it as of superior quality, will go so far as to buy it for money!

Some people eat it because of the promptings of a diseased appetite, but in the generality of cases the disease of geophagy is produced by the vice of it. And they themselves are well aware of it, for there are those who (by no means few, as is well known to those who have had to grapple with the tricks of the negro) eat earth with the single object of making



themselves ill and getting admitted to hospital, where they gain their end of being comfortably treated and having no work to do; they come out of hospital cured, or much improved in health, but you may count on having them back on hand within a fortnight. The watchfulness exercised over hands suspected of eating dirt is great, but it is always evaded, for one of the highest pleasures open to the black is to trick the white.

I apologise for insisting upon the effect of geophagy, as I repeat that in the majority of cases among the labourers it is a vice, and the cause rather than the effect of anæmia. The man who begins to eat and to like dirt as a food becomes anæmic because he does not nourish himself; or, if he eats nourishing food, he fails to digest it properly, as is obvious. It is easy to cure him if the vice be tackled in time and he be placed in circumstances where he cannot gratify it (I have witnessed several such cures myself); but in the majority of cases it is too late to remedy the mischief done, and death follows upon the slightest illness.

Anæmia produced by duodenal ankylostoma is also very frequent, but it yields readily to the continued use of vermifuges, especially of thymol, and is not serious when taken in time, for the lost blood is soon regained.

One can easily imagine what a black labourer is when a victim to the vices of alcoholism and earth-eating, vices too often associated. All the means tending to combat them are good, and I would recommend several as of certain efficacy in my opinion; but to carry them into practical operation one must grapple with great and grave difficulties, for they would alter the whole course of routine to which for long the blacks have been accustomed. This, however, is not my affair; it is for practical men to decide the means, and all I can say is, for grave evils, strong measures.

The measures which seem to me most necessary to combat effectually the alcoholic and geophagic habits are—

1. Suppress entirely the use of palm wine on the plantation; give instead a useful quantity of good grape wine to each hand at meals.
2. Supply exclusively cooked food to the hands, and make them mess together.

In this way you will avoid the sale of their rations by the hands, the habitual use of pimentos, cucumbers, tubers, and a thousand other articles of diet which they like and abuse; when they have eaten their fill they will not be tempted to go to the woods in search of unripe or overripe fruit,

roots, etc., things with which those who sell their rations for brandy appease their hunger. You will also check the eating of earth, for once the stomach is filled with a satisfying meal, this morbid tendency will have less opportunity of asserting itself, and the labourer being at the same time closely watched by a trustworthy servant of the estate, the reason why he does not eat, or eats little, will be inquired into, and he will be sent to hospital as soon as sickness is suspected.

On Boa Entrada they kill an ox once a week, and pigs besides ; they give the hands, instead of the very common salt-fish of Mossamedes, cod-fish of good quality. The worthy owner of Boa Entrada has been well advised to introduce into his plantation so valuable an improvement.

The ideal arrangement would be to give the labourer every day one meal at least of fresh meat, and the nearer the approach to that ideal the greater the advantage compensating for the pecuniary sacrifice involved.

3. The dwellings of the labourers should be watched, both in the main plantations and in the dependencies, so as to frustrate any attempt at going out at night ; for it is at night that the black, less carefully supervised, does his business with the *forros* and gets in his supply of brandy.

4. Besides these chief regulations there are others more easy of execution, falling into the category of general precautions to be taken with regard to the hands. For instance, the labourers in the forest and everywhere else should only drink boiled water, to be taken out to them in barrels, the latter being kept scrupulously clean. The negro never selects his drinking water, but takes whatever comes to hand when he is thirsty, even though polluted visibly with the excrement of animals, and though he may know that good clean water is to be had ten paces farther on. This is one of the main causes of diarrhoea and dysentery.

At the meals selected fruits should be given, principally bananas, a good food and one of which the blacks are very fond, thus checking the tendency to their devouring fruit in the jungles.

Every day the *sanzallas* (coolie lines) should be inspected, to compel cleanliness, and to allow of the seizure of fruits, wine, brandy, and other deleterious things the men are in the habit of keeping in their houses.

JOSÉ ANTONIO SALVADO MATTA.

S. THOMÉ, 8th October 1905.

## **STATISTICS**

THE statistical tables which follow form the documentary evidence indispensable to a judgment on the preceding statements and conclusions. We have in the first place the monthly statement of the working establishments on the plantation of Boa Entrada for the long period 1890–1905, with the monthly mean (No. 1). Then follow the table showing the importation of labour during the same period (No. 2), from which will be seen the difficulty of obtaining native labour in the island of S. Thomé, for as a rule the entrance of new hands does not cover the ascertained average loss of active labour by sickness and mortality (vide Table No. 3). It is relevant here to show the food-stuffs consumed on Boa Entrada from 1897 to 1905 (No. 4). The following tables (Nos. 5 to 11), taken bodily from the books of the plantation, show the general expenses incurred in each year from 1901 to 1906, giving a yearly average of 101,755\$741 reis (£22,613), which is about 10·2 milreis (£2, 5s.) per hectare planted and developed. These tables conclude with a statement of the labourers' co-operative society (No. 12), to which reference was made in the monograph, but which was not cited in the text.

# BOA ENTRADA PLANTATIONS

49

## I ROÇA BOA ENTRADA WORKING ESTABLISHMENTS

Months.	Years.															
	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
January .	...	245	268	265	277	270	300	328	331	387	457	429	561	604	569	530
February .	...	241	268	255	270	268	297	326	327	381	483	424	606	597	559	562
March .	...	240	266	255	267	276	292	324	328	402	537	417	643	594	562	558
April .	...	241	264	253	260	298	291	322	334	396	528	412	637	590	546	579
May .	...	241	258	208	262	304	289	322	334	388	502	409	634	621	540	646
June .	...	241	257	296	264	326	288	321	337	391	492	409	629	622	538	639
July .	...	245	255	302	258	319	288	322	338	426	487	407	627	611	536	636
August .	252	270	254	293	252	312	293	321	338	427	478	425	623	605	535	635
September .	254	271	267	286	270	311	281	319	261	424	468	435	620	599	534	627
October .	252	268	270	281	273	307	283	332	273	422	459	437	616	592	522	621
November .	252	267	270	278	276	307	313	336	273	426	445	441	612	580	534	609
December .	248	268	266	273	272	302	312	336	381	457	437	499	609	575	533	567
Total .	1258	3038	3163	3245	3201	3600	3527	3909	3855	4927	5773	5144	7417	7190	6508	7209
Monthly average .	251.6	353	263.58	270.4	266.7	300	294	325.7	321.25	410	481	428.6	618	599	542	600

*Notes.*—In May 1895, 25 Chinese were taken on—24 men and 1 woman. In May 1905 they left, 6 having died.  
 In May 1903, 36 natives of Cape Verde were taken on (17 men, 9 women).  
 In May 1905, 64 do. do. do. (30 men, 34 women).

II  
ROÇA BOA ENTRADA  
RECRUITMENT OF LABOUR

Months.	Years.															
	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
January .	...	...	...	...	5	...	...	...	...	7	4	...	70	...	...	...
February .	...	...	...	...	...	...	...	...	...	...	29	...	53	...	3	28
March .	...	1	...	...	...	11	...	...	4	25	60	...	41	...	...	...
April .	...	...	...	57	5	21	...	...	10	...	...	...	...	...	...	29
May .	...	1	...	...	6	34	...	...	1	...	...	...	...	36	2	79
June .	...	14	...	...	...	...	...	...	5	8	...	1	...	6	...	4
July .	...	...	...	...	...	...	1	4	5	42	...	2	...	...	8	...
August .	...	18	...	5	...	...	...	1	...	7	...	19	...	...	...	9
September .	...	5	14	7	19	1	...	...	25	...	...	13	...	...	...	...
October .	...	1	4	6	5	...	10	13	19	...	...	4	...	...	...	...
November .	...	...	...	4	1	...	20	9	5	6	...	7	...	...	11	...
December .	...	...	...	...	...	...	...	...	9	33	...	60	...	...	33	...
Total .	...	40	18	79	41	67	31	27	83	128	93	106	164	42	57	149

## BOA ENTRADA PLANTATIONS

51

## III

## ROÇA BOA ENTRADA

## DEATH-RATE AMONG THE LABOURERS

Months.	Years.															
	1890.	1891.	1892.	1893.	1894.	1895.	1896.	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
January .	...	...	...	4	7	1	3	...	5	4	3	7	8	5	6	3
February .	...	2	1	2	3	1	6	2	4	5	3	2	7	7	3	6
March .	...	1	3	2	7	...	1	2	3	4	6	7	4	3	4	3
April .	...	1	...	3	3	1	1	2	4	5	9	4	6	4	6	8
May .	...	2	1	6	7	4	1	...	5	7	9	4	2	5	3	10
June .	...	...	2	3	5	7	...	...	2	7	9	...	5	4	5	11
July .	...	...	...	5	2	7	5	2	4	6	6	3	2	7	5	3
August .	2	...	1	9	2	1	2	2	2	6	9	2	4	6	1	7
September .	1	2	1	6	...	4	1	2	2	4	10	2	3	6	2	8
October .	...	1	...	4	2	1	1	...	3	3	9	2	4	7	4	5
November .	1	...	4	5	6	5	...	5	...	2	9	2	4	12	4	12
December .	2	...	1	2	2	5	1	...	3	2	10	2	3	5	4	9
Total .	6	9	14	51	46	37	22	17	37	55	92	37	52	71	47	85
Monthly average .	...	...	1.18	4.25	3.88	3.08	1.88	1.41	3.08	4.58	7.66	3.0	4.3	5.9	3.9	7.0

## NOTE OF THE PRINCIPAL ARTICLES OF DIET CONSUMED ON THE ROÇA BOA ENTRADA

## IV

## LABOURING ESTABLISHMENTS

	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
Rice . . . Kilos	31,450	35,800	41,420	57,838	48,789	69,970	91,607	88,034	98,642
Millet-flour . . "	16,350	18,200	18,000	21,000	19,500	20,250	16,500	16,874	18,750
Codfish . . . "	...	...	...	680	13,740	16,460	16,040	16,842	17,100
Dried fish . . . "	23,700	25,200	24,060	34,800	23,250	35,195	31,895	28,350	...
"La Plata" dried meat . . "	2,720	4,500	8,800	8,557	6,664	2,124	...	...	...
Preserved meat . . . "	360	720	270	...	...	7,452	10,800	9,810	11,520
Brown sugar . . . "	200	200	200	200	200	150	250	680	1,100
Red and white wine . Litres	1,315	3,100	4,200	6,300	8,340	6,795	11,200	12,362	17,170
Sterilised milk . . . "	...	9	838	870	755	951	1,060	345	660
Palm oil . . . "	4,800	5,540	6,250	5,803	5,115	4,630	5,806	5,784	5,942
Mixed beans . . . Kilos	...	...	...	2,400	...	8,500	9,800	8,480	11,600
Manioc flour . . . "	...	...	...	...	...	...	480	...	...
Banana bread . . . "	82,875	88,403	104,755	122,895	109,354	157,899	152,745	138,210	153,000



# BOA ENTRADA PLANTATIONS

53

IV—Continued  
NOTE OF THE PRINCIPAL ARTICLES OF DIET CONSUMED ON THE ROÇA BOA ENTRADA  
DIRECTING STAFF

	1897.	1898.	1899.	1900.	1901.	1902.	1903.	1904.	1905.
Rice . . . Kilos	...	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Wheat-flour . . "	1,056	1,316	1,950	2,160	2,092	2,030	2,160	2,160	3,168
Codfish . . . "	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
Potato and onion . . "	2,160	2,640	2,790	2,340	2,262	2,574	2,215	2,215	3,100
Sausage, lard, ham, trotters . . "	...	780	820	776	810	825	916	916	1,122
Sugar . . . "	618	480	480	360	336	432	380	380	...
Bread-stuffs . . . "	480	90	90	90	90	90	83	83	78
Dried vegetables . Litres	45	2,400	2,400	2,400	2,450	2,400	2,878	2,878	2,437
Wine . . . "	2,300	4,500	4,500	4,500	5,000	5,000	5,000	5,000	5,000
Oil . . . "	4,410	204	288	288	288	342	402	402	444
Pickled fish . . Kilos	204	1,220	1,220	930	1,110	120	242	242	250
American tinned meat . . "	1,220	...	...	...	...	520	1,056	1,056	1,017

## V.

## BOÇA BOA ENTRADA

## EXPENDITURE OF THE YEAR 1900

## Establishments :

*Directing—*

Salaries, diet, and passage-money . . . . .	10,846\$243
---	-------------

*Labouring—*

Importation, wages, diet, clothing, and sundries . . . . .	44,666\$767
--	-------------

## Hospital :

Doctor, hospital assistant and servants, medicines, furniture, clothing, and sundries . . . . .	4,151\$317
---	------------

## Transport :

*Bullocks and carts—*

Purchase, forage, iron-work, shoeing, and harness ; Carpenters, carters, implements, paints, grease, etc. . . . .	5,774\$223
--	------------

## Constructions :

Materials, tools, workmen, and labourers . . . . .	7,952\$735
--	------------

## Lighting :

Lamps and petroleum . . . . .	314\$028
-------------------------------	----------

## Taxes :

Export duty, ground rate, wages, and coolies . . . . .	9,411\$777
--	------------

Bagging, cord, and agricultural tackle . . . . .	3,745\$154
--	------------

Machines . . . . .	1,104\$360
--------------------	------------

Railway . . . . .	1,073\$920
-------------------	------------

Various expenses (miscellaneous) . . . . .	3,222\$713
--	------------

Reis	<u>92,163\$237</u>
------	--------------------

Monthly average strength of labourers, 481 . . . . .	<u>£20,482</u>
--	----------------

# BOA ENTRADA PLANTATIONS

55

## VI.

### ROÇA BOA ENTRADA

#### EXPENDITURE OF THE YEAR 1901

##### Establishments :

##### *Directing—*

Salaries, diet, and passage-money . . . . .	20,286\$622
---	-------------

##### *Labouring—*

Importation, wages, diet, clothing, sundries . . . . .	31,789\$022
--	-------------

##### Hospital :

Doctor, hospital assistant and servants, medicines, furniture, clothing, sundries . . . . .	7,201\$967
---	------------

##### Transport :

##### *Bullocks and carts—*

Purchase, forage, iron-work, shoeing, and harness ; Carpenters, carters, implements, paints, grease, etc. . . . .	6,564\$788
--	------------

##### Constructions :

Materials, tools, workmen, and labourers . . . . .	4,777\$071
--	------------

##### Lighting :

Lamps and petroleum . . . . .	204\$170
-------------------------------	----------

##### Taxes :

Export duty, ground rate, wages, and coolies . . . . .	12,310\$839
--	-------------

Begging, cord, and agricultural tackle . . . . .	3,734\$804
--	------------

Machinery and telephones . . . . .	1,814\$425
------------------------------------	------------

Railway . . . . .	5,286\$000
-------------------	------------

Miscellaneous expenses . . . . .	6,110\$348
----------------------------------	------------

Reis	100,080\$056
------	--------------

Monthly average strength of labourers, 428 . . . . .	<u>£22,240</u>
--	----------------

## VII.

## ROÇA BOA ENTRADA

## EXPENDITURE OF THE YEAR 1902

## Establishments :

*Directing—*

Salaries, diet, and passage-money . . . . .	20,352\$811
---	-------------

*Labouring—*

Importation, wages, diet, clothing, sundries . . . . .	66,616\$507
--	-------------

## Hospital :

Doctor, hospital assistant and servants, medicines, furniture, clothing, sundries . . . . .	3,630\$512
---	------------

## Transport :

*Bullocks and carts—*

Purchase, forage, iron-work, shoeing, and harness ; Carpenters, carters, implements, paint, grease, etc. . . . .	8,816\$644
---	------------

## Constructions :

Materials, tools, workmen, and labourers . . . . .	7,509\$976
--	------------

## Lighting :

Lamps and petroleum, electric light . . . . .	5,475\$334
---	------------

## Taxes :

Export duty, ground rate, wages, and coolies . . . . .	12,263\$502
--	-------------

Bagging, cord, agricultural tackle, plants and seeds . . . . .	5,886\$679
--	------------

Machinery . . . . .	3,026\$860
---------------------	------------

Railway . . . . .	782\$380
-------------------	----------

Miscellaneous expenses . . . . .	3,170\$920
----------------------------------	------------

Reis	137,532\$125
------	--------------

Monthly average strength of labourers, 618 . . . . .	<u>£30,563</u>
--	----------------

# BOA ENTRADA PLANTATIONS

57

## VIII.

### ROÇA BOA ENTRADA

#### EXPENDITURE OF THE YEAR 1903

##### Establishments :

##### *Directing—*

Salaries, diet, and passage-money . . . . .	17,656\$805
---	-------------

##### *Labouring—*

Importation, wages, diet, clothing, sundries . . . . .	27,971\$045
--	-------------

##### Hospital :

Doctor, hospital assistant and servants, medicines, furniture, clothing, sundries . . . . .	3,473\$160
---	------------

##### Transport :

##### *Bullocks and carts—*

Purchase, forage, iron-work, shoeing, and harness ; Carpenters, carters, implements, paint, grease, etc. . . . .	7,106\$895
---	------------

##### Constructions :

Materials, tools, workmen, and labourers . . . . .	13,615\$655
--	-------------

##### Lighting :

Lamps, petroleum, and electric light . . . . .	2,164\$200
--	------------

##### Taxes :

Export duty, ground rate, industrial rate, salaries, and coolies . . . . .	13,735\$815
--	-------------

Bagging, cord, agricultural tackle, and plants . . . . .	4,327\$255
--	------------

Experiments in the improvement of cocoa . . . . .	2,312\$000
---	------------

Railway . . . . .	2,880\$000
-------------------	------------

Machinery and lightning-conductors . . . . .	2,351\$160
--	------------

Transport by sea . . . . .	1,779\$060
----------------------------	------------

Miscellaneous expenses . . . . .	2,991\$820
----------------------------------	------------

Reis	<u>102,364\$870</u>
------	---------------------

Monthly average strength of labourers, 599 . . . . .	<u>£22,747</u>
--	----------------

## IX.

## BOÇA BOA ENTRADA

## EXPENDITURE OF THE YEAR 1904

## Establishments :

*Directing—*

Salaries	.	.	.	.	.	10,461\$600	
Diet	.	.	.	.	.	5,774\$340	
Passage-money	.	.	.	.	.	365\$470	
							15,601\$410

*Labouring—*

Importation	.	.	.	.	.	1,356\$480	
Wages	.	.	.	.	.	6,862\$530	
Diet	.	.	.	.	.	16,609\$835	
Clothing	.	.	.	.	.	2,901\$310	
Sundries	.	.	.	.	.	60\$927	
							27,791\$178

## Hospital :

Doctor	.	.	.	.	.	900\$000	
Hospital assistant and servants	.	.	.	.	.	497\$530	
Medicines	.	.	.	.	.	1,235\$705	
Clothing, furniture, etc.	.	.	.	.	.	121\$300	
Sundries	.	.	.	.	.	55\$000	
							2,808\$905

## Transport :

*Cattle—*

Purchase	.	.	.	.	.	2,507\$800	
Forage	.	.	.	.	.	2,086\$795	
Iron-work	.	.	.	.	.	63\$000	
Shoeing	.	.	.	.	.	324\$640	
Harness	.	.	.	.	.	182\$600	
							5,166\$835

*Carts—*

Carpenters	.	.	.	.	.	180\$000	
Carters	.	.	.	.	.	252\$790	
Rations	.	.	.	.	.	25\$800	
Implements, paint, etc.	.	.	.	.	.	80\$000	
Grease, etc.	.	.	.	.	.	120\$150	
							638\$740

## Constructions :

Materials	.	.	.	.	.	4,103\$805	
Tools	.	.	.	.	.	151\$645	
Workmen	.	.	.	.	.	3,180\$560	
Labourers	.	.	.	.	.	723\$210	
							8,159\$220

Carry forward 61,166\$288

## 59

	Brought forward	
Lighting :		61,166\$288
Lamps . . . . .	9\$460	
Petroleum . . . . .	150\$150	
		159\$610
Taxes :		
Export duties . . . . .	9,237\$650	
Land rate . . . . .	4,618\$824	
		13,856\$474
Bagging and cord . . . . .	3,506\$970	
Agricultural tackle . . . . .	330\$860	
Destruction of rats . . . . .	228\$020	
Objects of domestic use . . . . .	218\$225	
Objects for the use of the labourers . . . . .	250\$150	
Sheepfold and henhouse . . . . .	163\$000	
Clerical and miscellaneous expenses . . . . .	320\$080	
Interments of labourers . . . . .	58\$130	
Town agency . . . . .	720\$000	
Counsel . . . . .	650\$000	
Stamps and cost of transfer . . . . .	432\$115	
Plants and seeds . . . . .	61\$370	
Fire insurance premium . . . . .	253\$400	
Experiments in manuring . . . . .	5,255\$105	
Cost of transport . . . . .	930\$000	
Carriers . . . . .	68\$400	
Railway . . . . .	193\$415	
Electric lighting . . . . .	456\$585	
Machinery . . . . .	2,687\$460	
Telephones . . . . .	161\$000	
		16,944\$285
	Reis	92,126\$657
Monthly average strength of labourers, 542 . . . . .		£20,472

## X.

## ROÇA BOA ENTRADA

## EXPENDITURE OF THE YEAR 1905

## Establishments :

*Directing—*

Salaries . . . . .	7,131\$140	
Diet . . . . .	5,515\$340	
Passage-money . . . . .	467\$800	
	<hr/>	13,114\$280

*Labouring—*

Importation . . . . .	14,874\$810	
Wages . . . . .	9,654\$480	
Diet . . . . .	22,397\$821	
Clothing . . . . .	2,539\$325	
	<hr/>	49,466\$436

## Hospital :

Doctor . . . . .	900\$000	
Hospital assistant and servants . . . . .	484\$500	
Medicines . . . . .	1,380\$350	
	<hr/>	2,764\$850

## Transport :

*Cattle—*

Purchase . . . . .	3,085\$100	
Forage . . . . .	1,917\$340	
Iron-work . . . . .	41\$375	
Shoeing . . . . .	363\$300	
Harness . . . . .	72\$300	
	<hr/>	5,479\$415

*Carts—*

Carpenters . . . . .	180\$000	
Carters . . . . .	205\$650	
	<hr/>	385\$650

## Construction :

Materials . . . . .	6,708\$855	
Tools . . . . .	139\$935	
Workmen . . . . .	2,890\$650	
Labourers . . . . .	967\$010	
	<hr/>	10,706\$450

## Lighting :

Lamps, petroleum . . . . .	85\$700	
----------------------------	---------	--

## Taxes :

Export duties . . . . .	9,046\$572	
Land rate . . . . .	4,523\$236	
	<hr/>	13,569\$808

Carry forward . . . . . 95,572\$589



# BOA ENTRADA PLANTATIONS

61

	Brought forward	95,572\$589
Bagging and cord	3,366\$820	
Agricultural tackle	239\$090	
Destruction of rats	224\$285	
Objects of domestic use	178\$430	
Do. for use of labourers	139\$580	
Sheepfold and poultry-yard	171\$350	
Clerical and miscellaneous expenses	464\$150	
Interment of labourers	101\$190	
Town agency	720\$000	
Counsel	650\$000	
Stamps and cost of transfer	509\$520	
Cost of transport	1,118\$020	
Experiments in manuring	550\$770	
Electric lighting	219\$000	
Fire insurance premium	217\$630	
Plants and seeds	63\$600	
Photographic work	347\$230	
Carriers	71\$480	
Machinery	647\$000	
	<u>9,999\$145</u>	
	Reis <u>105,571\$734</u>	
Monthly average strength of labourers, 600		<u>£23,460</u>

## XI.

## ROÇA BOA ENTRADA

## EXPENDITURE OF THE YEAR 1906

Establishments :	
<i>Directing—</i>	
Salaries, diet and passage-money . . . . .	15,688\$734
<i>Labouring—</i>	
Importation, wages, diet, clothing, sundries . . . . .	29,998\$755
Hospital :	
Doctor, hospital assistant and servants, medicines, furniture, clothing, sundries . . . . .	2,307\$865
Transport :	
<i>Bullocks and carts—</i>	
Purchase, forage, iron-work, shoeing, harness . . . . .	2,166\$075
Carpenters, carters, boat service, railway . . . . .	3,339\$815
Constructions :	
Materials, tools, workmen, labourers . . . . .	5,386\$835
Lighting :	
Lamps, petroleum, electrician, materials . . . . .	675\$670
Taxes :	
Export duty, ground rate . . . . .	10,956\$769
Bagging, cord, agricultural tackle, machinery . . . . .	4,087\$820
Destruction of rats . . . . .	156\$880
Purchase of land . . . . .	1,205\$800
Domestic utensils . . . . .	630\$001
Farm and poultry-yard . . . . .	202\$100
Clerical and general office expenses . . . . .	578\$318
Burials of labourers (41 adults, 10 children) . . . . .	51\$855
Agency in town . . . . .	720\$000
Solicitor and attorney . . . . .	650\$000
Transfer-charges, stamps, and fire insurance . . . . .	953\$421
Porters . . . . .	61\$700
Freight of cocoa to Havre . . . . .	775\$700
Plants and seeds . . . . .	84\$400
Sundry expenses—Colonial Exhibition, monograph, etc. . . . .	1,597\$850
	<hr/>
	7,842\$825
	<hr/>
	Reis 82,451\$163
	<hr/>
Monthly average strength of labourers, 476 . . . . .	<hr/>
	£18,322
	<hr/>

# BOA ENTRADA PLANTATIONS

63

## XII.

### ROÇA BOA ENTRADA

#### LABOURERS' CO-OPERATIVE SOCIETY

Year.	Receipts.		Num- ber of Men.	Outlay of each.	Gain of each.	Total wages paid to Labourers.	Difference.
	Gross.	Net.					
1898	3,312\$580	818\$181	321	9\$573	2\$549	6,107\$390	2,794\$810
1899	3,164\$493	550\$346	410	7\$718	1\$415	6,465\$310	3,300\$817
1900	3,591\$193	457\$558	481	7\$466	992	6,465\$310	3,916\$697
1901	3,256\$510	393\$793	428	7\$608	920	6,353\$210	3,096\$700
1902	3,545\$930	232\$105	618	5\$737	374	8,278\$832	4,732\$902
1903	3,491\$780	183\$169	599	5\$829	205	8,657\$760	5,165\$980
1904	3,492\$220	158\$234	542	6\$443	291	9,516\$810	6,024\$590
1905	3,974\$810	203\$924	600	6\$625	339	11,392\$230	7,417\$420
1906	3,694\$550	231\$937	476	7\$761	487	9,603\$280	5,908\$720

UNIV. OF MICHIGAN

MAY 29 1914

*Printed by*  
**MORRISON & GIBB LIMITED,**  
*Edinburgh.*

**VIEWS OF THE BOA ENTRADA  
PLANTATIONS**

## LIST OF VIEWS

- I. GENERAL VIEW OF THE BUILDINGS (1905).
- II. SENZALLA—GROUP OF LABOURERS' HOUSES.
- III. HOSPITAL—FRONT VIEW.
- IV. HOSPITAL—SIDE VIEW.
- V. INFIRMARY.
- VI. HOSPITAL FOR CONTAGIOUS DISEASES.
- VII. WATERING-PLACE.
- VIII. GROUP OF OLD HANDS (1892).
- IX. GROUP OF CHILDREN BORN ON THE PLANTATION (1894).
- X. COCOA-TREE IN FULL BEARING.
- XI. PICKING COCOA IN THE POD.
- XII. PILING UP THE COCOA PODS FOR SHELLING.
- XIII. SHELLING THE COCOA PODS.
- XIV. FILLING TRUCKS WITH COCOA AFTER SHELLING.
- XV. DRYING COCOA ON THE BARBACUES.
- XVI. PLATFORMS FOR DRYING, AND STORE FOR BAGGING COCOA.
- XVII. REPAIRING A ROAD.
- XVIII. RAILWAY LINE IN THE PLANTATIONS.
- XIX. MANAGER'S RESIDENCE.
- XX. FARM-STEADING, LABOURERS' KITCHEN, AND MACHINE HOUSE (1898).
- XXI. CARPENTERS' AND SAWYERS' SHEDS.
- XXII. LABOURERS' DWELLINGS AND TANK FOR WASHING CATTLE.
- XXIII. ROAD ACROSS THE PLANTATIONS, BETWEEN PALM TREES.
- XXIV. FIELD OF *AGAVIA MEXICANA* OF THREE-AND-A-HALF YEARS' GROWTH.
- XXV. FIELD OF *AGAVIA MASCARENHENSIS* OF THREE YEARS' GROWTH.
- XXVI. *CASTILLOA ELASTICA*—FIVE-AND-A-HALF YEARS' GROWTH.
- XXVII. *MANIHOT GLAZIOVII*—THREE YEARS' GROWTH; 8 METRES IN HEIGHT.
- XXVIII. *CASTILLOAS* AND *HEVEAS*—FIVE-AND-A-HALF YEARS' GROWTH.
- XXIX. PLANTATION OF YOUNG COCOA-NUT PALMS (1906).
- XXX. MANGO TREE—FIVE YEARS' GROWTH; 8 METRES IN HEIGHT.
- XXXI. TRUNK OF *OCÁ*, 26 METRES IN CIRCUMFERENCE AT 1.80 METRES ABOVE THE GROUND.
- XXXII. RAILWAY TOWARDS THE BEACH.
- XXXIII. TERMINAL POINT OF THE RAILWAY AT JETTY ON BEACH.



SENZALLA—GROUP OF LABOURERS' HOUSES.

342





SENZALIA—GROUP OF LABOURERS' HOUSES.

U. S. N. A.

340



HOSPITAL—FRONT VIEW.

U. S. N. M.

Med



HOSPITAL—SIDE VIEW.

U.S. M.

34



HOSPITAL—SIDE VIEW.

U. S. N. M.

34





HOSPITAL FOR CONTAGIOUS DISEASES.

U. S. N.





WATERING PLACE.

U of M

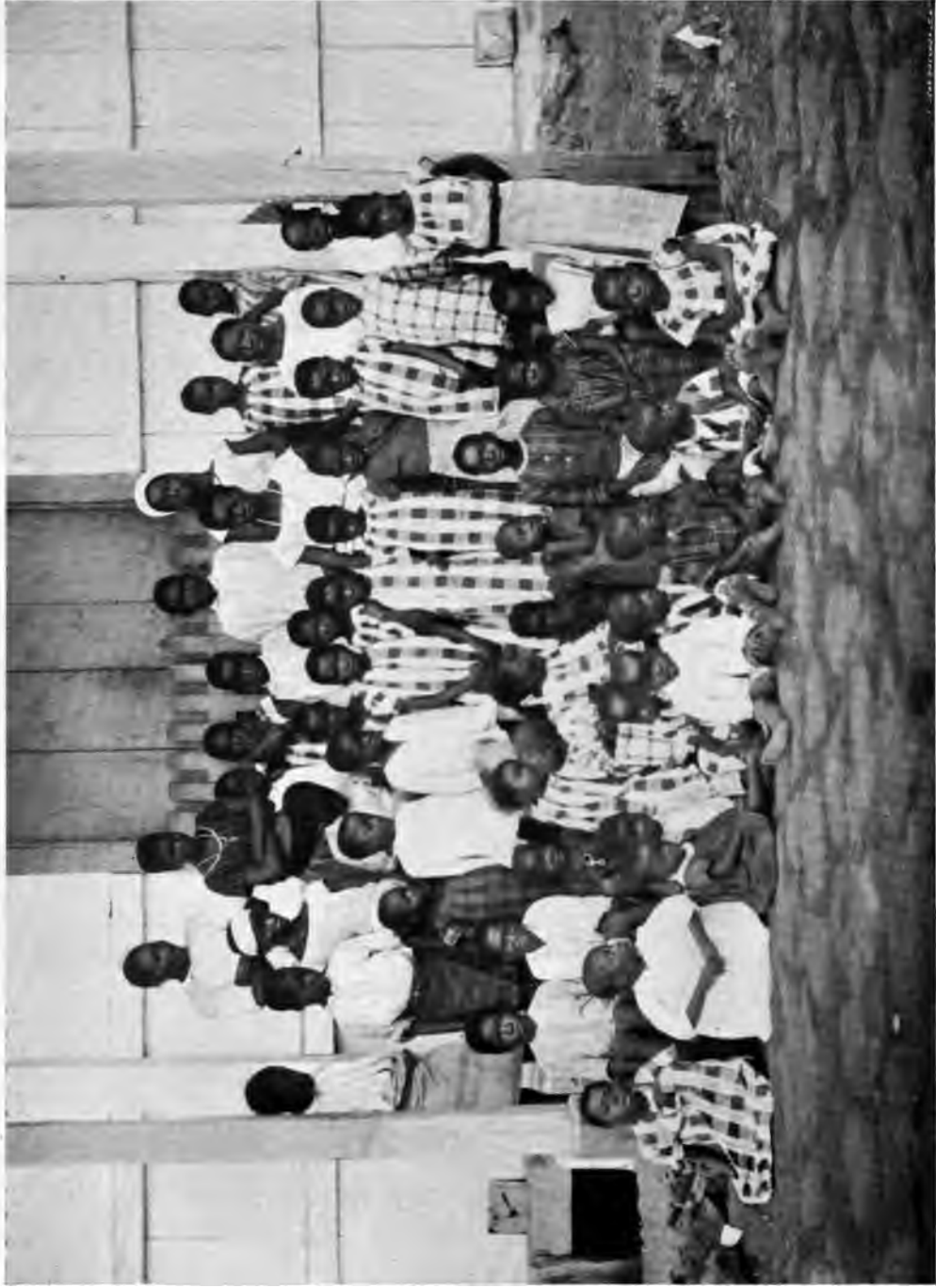
Ms. A. 9. 2



GROUP OF OLD HANDS (1892)

1892





GROUP OF CHILDREN BORN ON THE PLANTATION (1894).

345





COCOA-TREE IN FULL BEARING.

25

11



PICKING COCOA IN THE POD.





COCOA-TREE IN FULL BEARING.

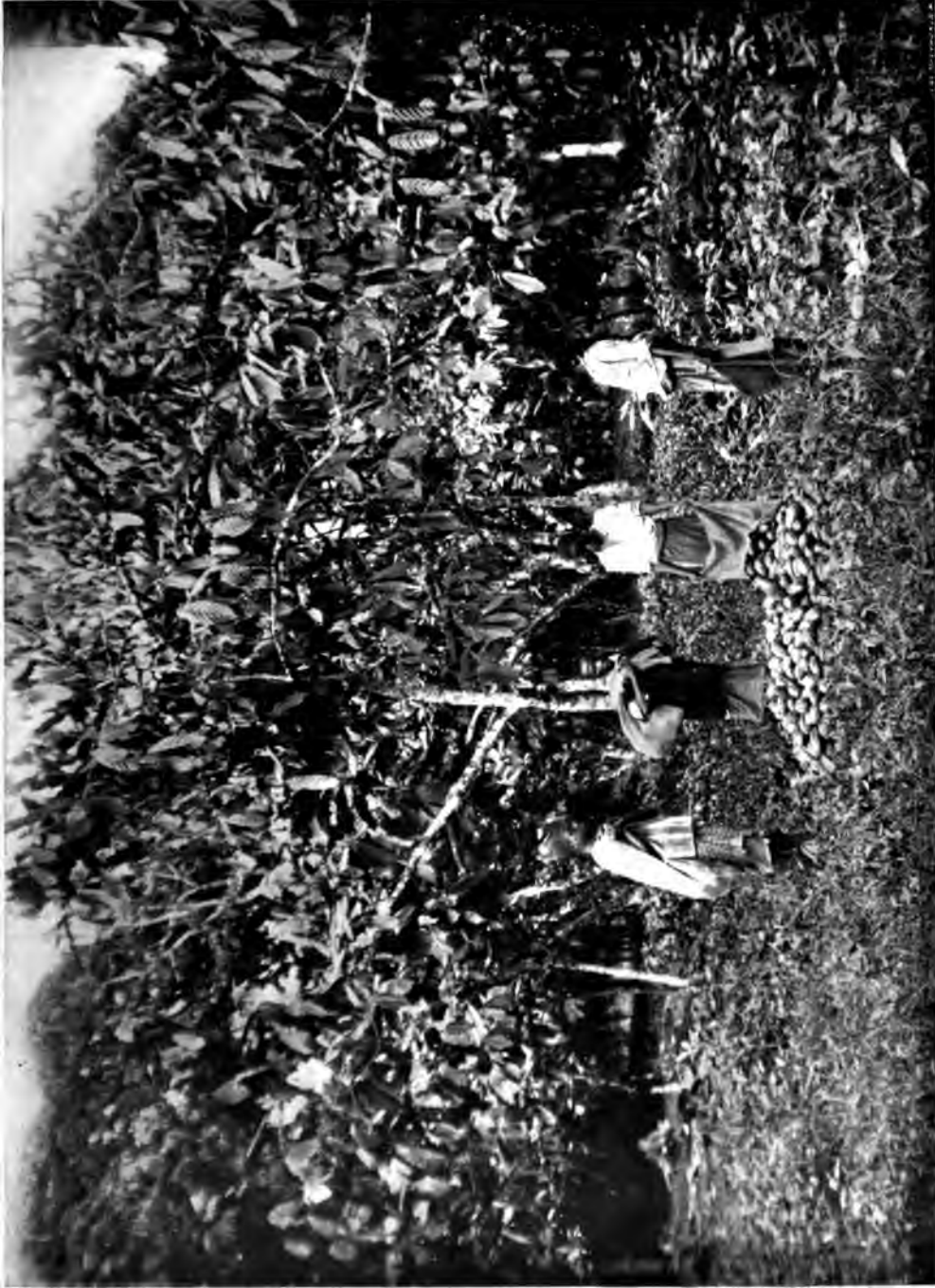
32



PICKING COCOA IN THE POD.

2020





11071  
PILING UP THE COCOA PODS FOR SHELLING.

11071

30



U. S. N.

DRYING COCOA ON THE BARBACUES.

.

32



PLATFORMS FOR DRYING, AND STORE FOR BAGGING COCOA.

1105 M

34



REPAIRING A ROAD.

34





RAILWAY LINE IN THE PLANTATIONS.





MANAGER'S RESIDENCE.

32



FARM-STEADING, LABOURERS' KITCHEN, AND MACHINE-HOUSE (1898).

320



CARPENTERS' AND SAWYERS' SHEDS.

U.S.N.







LABOURERS' DWELLINGS AND TANK FOR WASHING CATTLE.

1307 M





ROAD ACROSS THE PLANTATIONS, BETWEEN PALM TREES.

2020



FIELD OF *AGAVIA MEXICANA* OF THREE-AND-A-HALF YEARS' GROWTH.

U. S. G. O.

32



FIELD OF *AGAVE MASEARENHENSIS* OF THREE YEARS' GROWTH.

1105 M

32





*CASTILLOA ELASTICA*—FIVE AND-A-HALF YEARS' GROWTH.

.

342



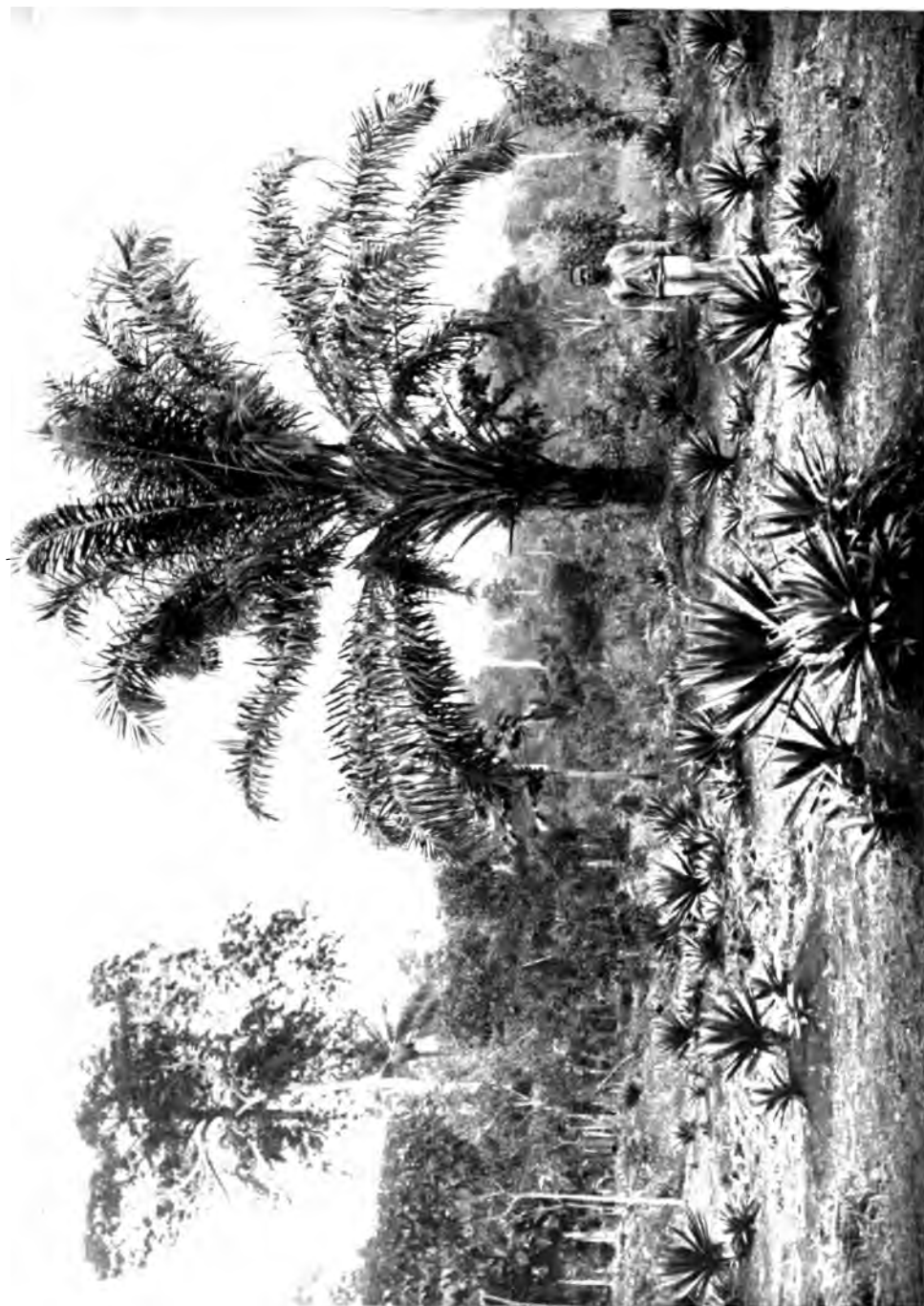
*MANIHOT GLAZIOVII*—THREE YEARS' GROWTH ; 8 METRES IN HEIGHT.

32

100

100

1



FIELD OF *AGAVE MASEAENSIS* OF THREE YEARS' GROWTH.

34



PLANTATION OF YOUNG COCONUT PALMS (1906)

320

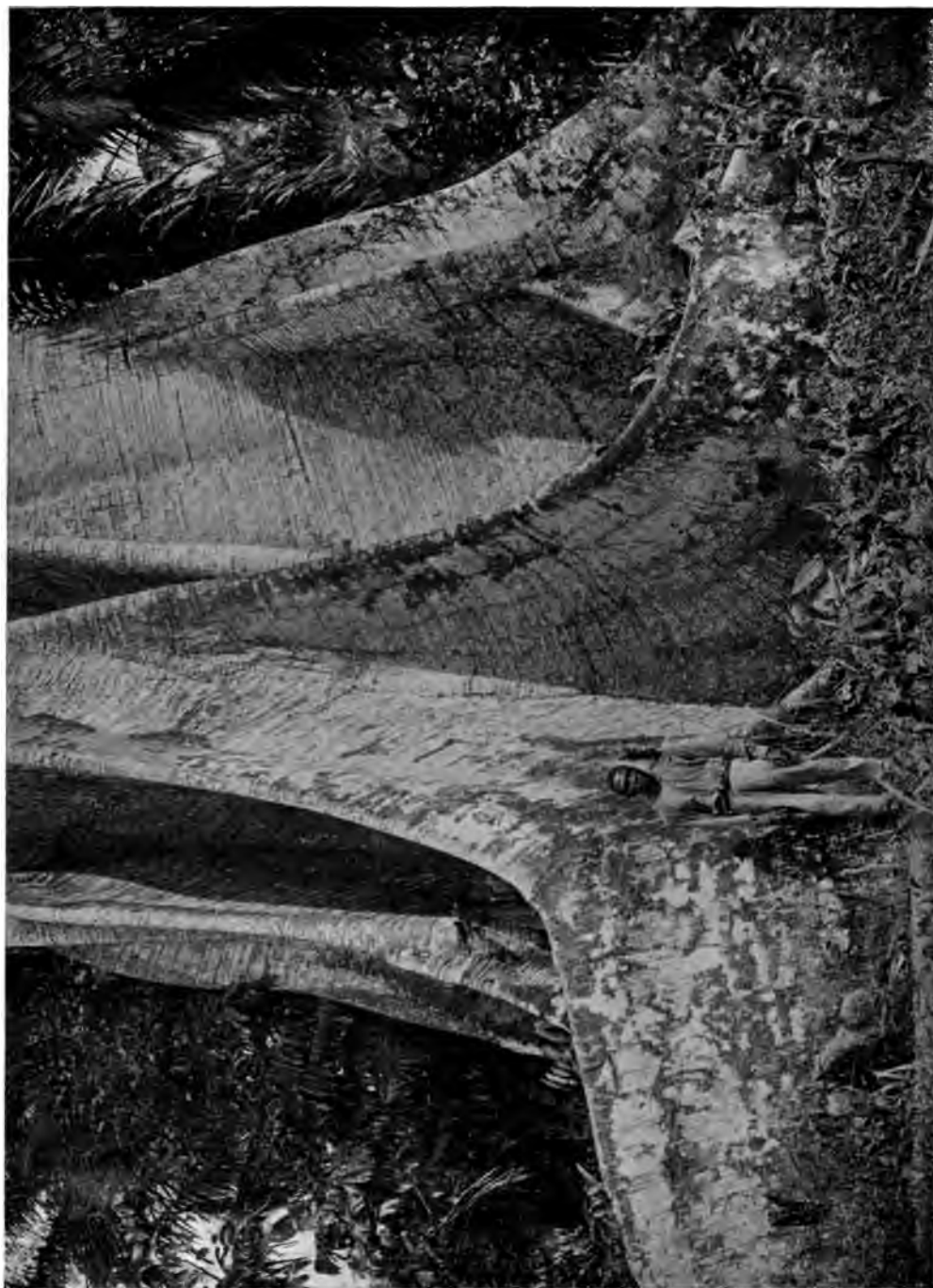




MANGO TREE—FIVE YEARS' GROWTH; 8 METRES IN HEIGHT.

55





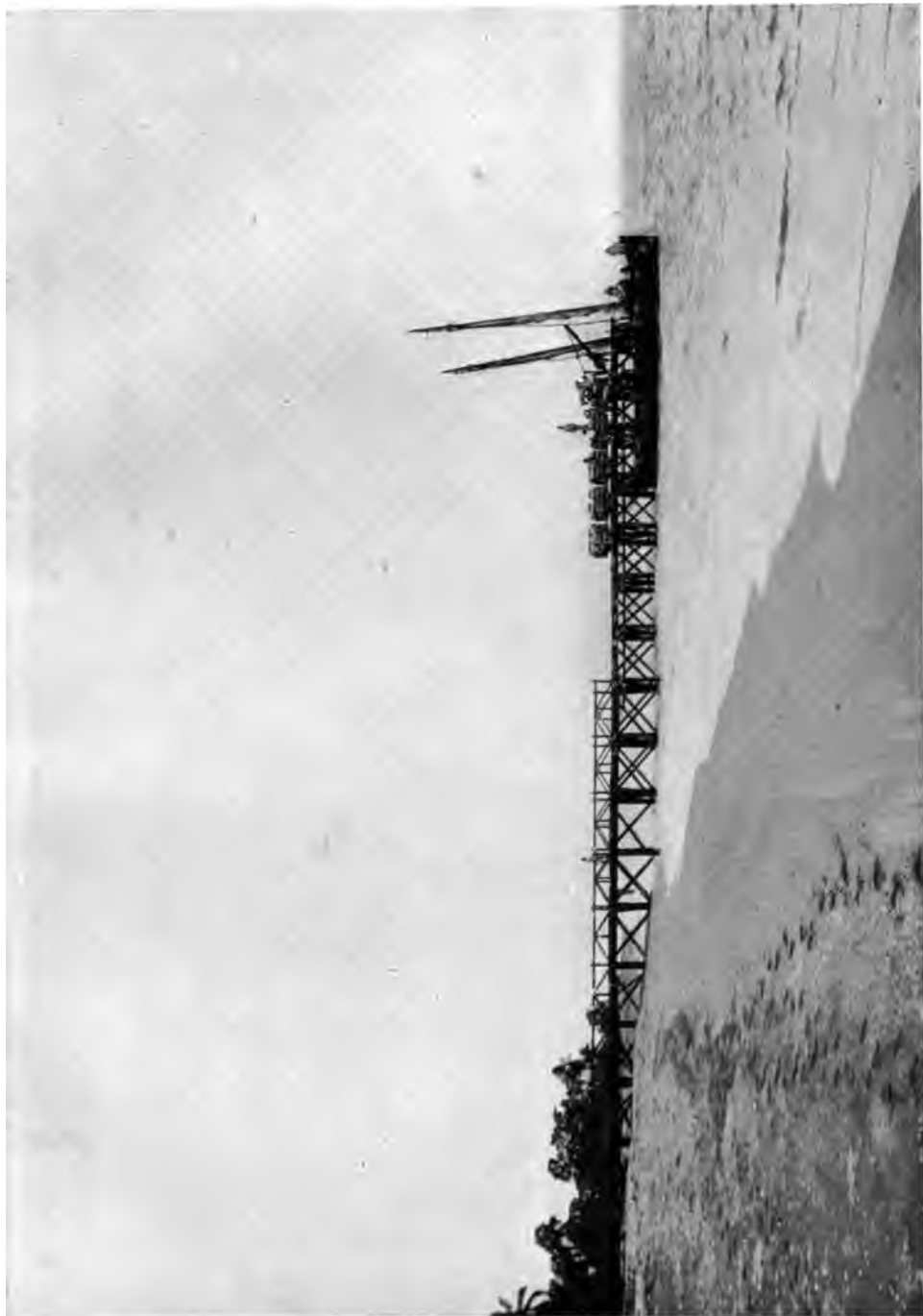
TRUNK OF *OC*, 26 METRES IN CIRCUMFERENCE AT 1.80 METRES ABOVE THE GROUND,

320



RAILWAY TOWARDS THE BEACH.

340



TERMINAL POINT OF THE RAILWAY AT JETTY ON BEACH.

U.S.N.







